REPLACE AIR HANDLER UNITS BUILDING 77

PROJECT NO. 621-11-127
JAMES H. QUILLEN VA MEDICAL CENTER
MOUNTAIN HOME, TENNESSEE

SCALE: 3/4"=1'-0" (0 2 4 8 12)

SCALE: 1/2"=1'-0" (0 2 4 8 12)

SCALE: 1/4"=1'-0" (0 2 4 8 12)

SCALE: 1/8"=1'-0" (0 2 4 8 12)

SHEET INDEX

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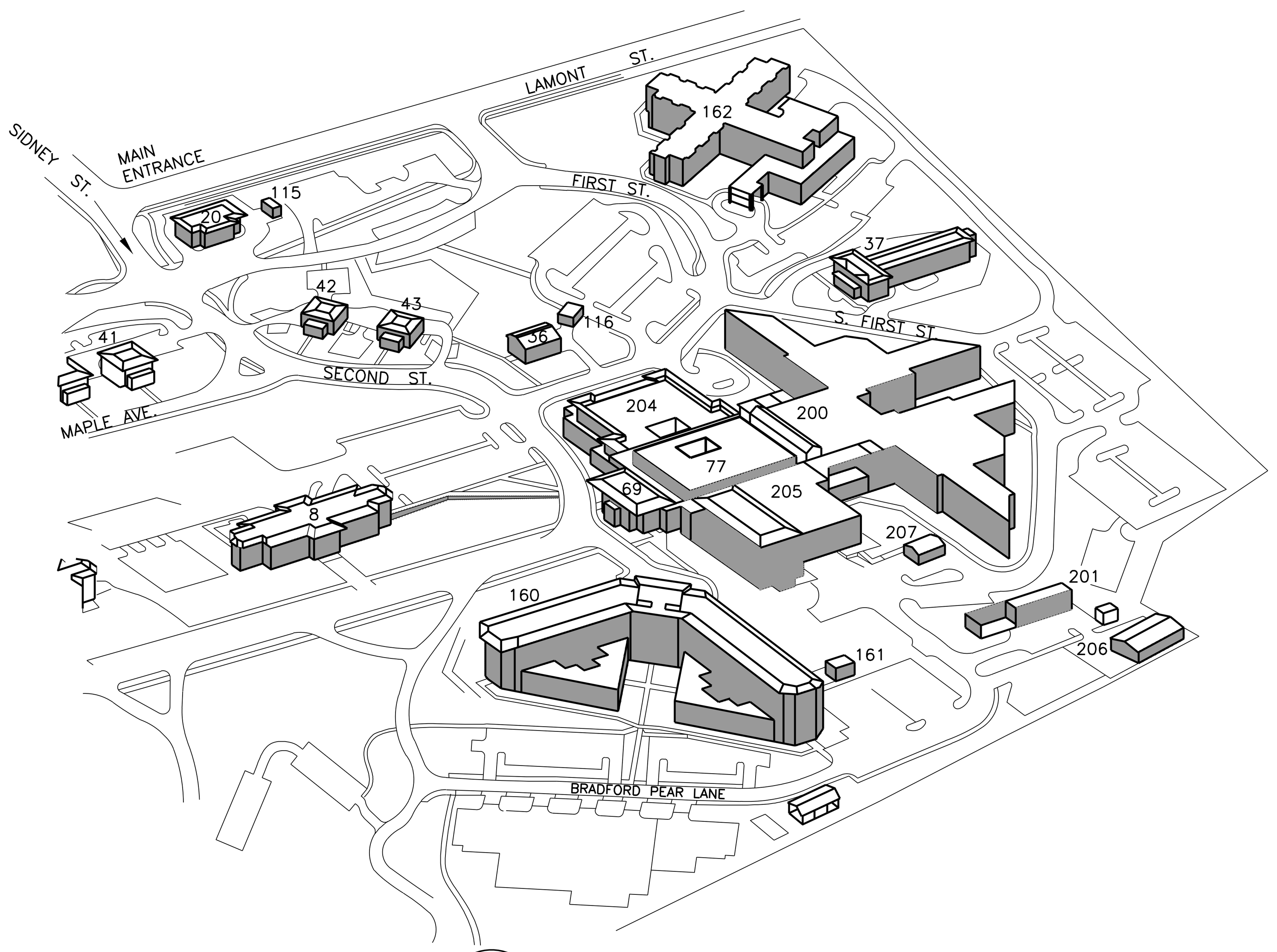

SITE PLAN
NOT TO SCALE

AREA MAP
NOT TO SCALE

DATE	REVISIONS

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Drawing Title: TITLE SHEET, AREA MAP SITE PLAN, SHEET INDEX

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

Date: 4/24/12
Project No.: 621-11-127
Drawn: BMA
Building Number: 77
Drawing No. GI-1
Checked: PM
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Department of Veterans Affairs

GENERAL NOTES

1. UNLESS SPECIFICALLY NOTED AS EXISTING, ALL ITEMS, EQUIPMENT AND WORK SHOWN IS NEW AND SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
2. DURING THE EXECUTION OF THIS CONTRACT, THE SITE AND BUILDINGS WILL BE OCCUPIED AND IN USE. WORK DONE UNDER THIS CONTRACT SHALL BE PERFORMED WITHOUT INCONVENIENCE TO THE OWNER INSOFAR AS POSSIBLE. ALL WORK SHALL BE COORDINATED WITH THE CONTRACTING OFFICER'S REPRESENTATIVE AND IS SUBJECT TO HIS CONTINUOUS APPROVAL.
3. "NORMAL" WORKING HOURS AT THE HOSPITAL ARE FROM 7 AM TO 4 PM, MONDAY THROUGH FRIDAY; HOURS OUTSIDE OF "NORMAL" WORKING HOURS ARE DEFINED AS "OFF HOURS". THE CONTRACTOR SHALL DEVELOP A SCHEDULE OF DEMOLITION, NEW INSTALLATION AND CHANGEOVER OF THE MECHANICAL, PLUMBING, AND UTILITY SYSTEMS THAT WILL ALLOW FOR MINIMUM DOWNTIME. THE CONTRACTOR SHALL DEVELOP AND PRESENT A CONSTRUCTION PLAN WITH ALL PHASING, STAGING AND SEQUENCING OF WORK FOR APPROVAL PRIOR TO THE COMMENCEMENT AND BEGINNING IMPLEMENTATION OF HIS WORK. THE CONTRACTOR SHALL DETERMINE PRIOR TO SUBMITTING HIS BID, THE SPECIFIC TIME AVAILABILITY OF ALL AREAS AND SPACES AND DETERMINE WHAT WORK MUST ME DONE ON OFF HOURS AND INCLUDE ALL RELATED COSTS IN THE BID PRICE.
4. ALL WORK MUST BE IN FULL COMPLIANCE WITH THE INFECTION PREVENTION MEASURES SPECIFIED IN DIVISION I, "GENERAL REQUIREMENTS."... SEE THE CONSTRUCTION DIRECTIVES.
5. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR ALL CHARACTERISTICS OF THE EQUIPMENT THAT HE INTENDS TO INSTALL. IF THERE ARE ANY DIFFERENCES IN THE EQUIPMENT SHOWN ON THE DESIGN DRAWINGS AND THE EQUIPMENT TO BE INSTALLED, THE CONTRACTOR SHALL MAKE ALL CHANGES AND ADJUSTMENTS TO ACCOMMODATE THE PROPOSED EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. THIS APPLIES TO ALL SUPPORT SERVICES AND FACILITIES NECESSARY TO PROPERLY INSTALL THE EQUIPMENT TO FUNCTION ADEQUATELY AS PART OF THE SYSTEMS FOR WHICH THEY WERE DESIGNED AND SELECTED. THESE CHARACTERISTICS INCLUDE SUCH THINGS AS WEIGHT, DIMENSIONS, ELECTRICAL, MECHANICAL, PLUMBING, AND UTILITY SERVICES, ETC. ACCOMMODATING SERVICES INCLUDE SUCH THINGS AS DIMENSIONS, LOCATIONS AND SIZES OF SUPPORTING MEMBERS, PIPE, CONNECTION SIZES, ELECTRICAL SERVICE SIZE AND PROTECTION, ELECTRICAL CONNECTION LOCATION, UTILITY AND PLUMBING CONNECTION SIZES AND LOCATIONS, ETC. ALL REQUIRED CHANGES TO THE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE DESIGNED AND STAMPED BY REGISTERED ENGINEERS IN THE APPROPRIATE DISCIPLINE EMPLOYED BY THE CONTRACTOR AND SHALL BE INCLUDED AS PART OF THE EQUIPMENT SUBMITTALS. ALL CHANGES SHALL BE SUBJECT TO THE APPROVAL OF THE PROJECT A/E AND THE CONTRACTING OFFICER'S REPRESENTATIVE.
6. COMPLETE, DETAILED AND COMPLETELY MARKED SUBMITTALS ARE REQUIRED. MULTIPLE SUBMITTALS ARE ACCEPTABLE. EACH CUT SHEET MUST BE MARKED TO COMPLETELY IDENTIFY THE ITEM PROPOSED. WHEN MULTIPLE ITEMS ARE REQUIRED, CORRELATE EACH ITEM WITH THE PLANS AND SPECS. EVERYTHING THAT IS PRESENTED IN EACH SUBMITTAL MUST BE COMPLETE AND ADEQUATELY MARKED OR THE ENTIRE SUBMITTAL WILL BE REJECTED WITHOUT REVIEW. COMPLETE MEANS: A) ALL ITEMS MUST BE CLEARLY MARKED FOR TAG NUMBER, MODEL NUMBER, SIZE, PART NUMBER, ACCESSORIES, OPTIONS, MATERIALS, CLASS, RATINGS, DESIGN DATA, PERFORMANCE, AND ANY OTHER INSTALLATION DETAILS AS NECESSARY TO EVALUATE THE SUITABILITY OF THE ITEM TO MEET THE INTENT OF THE DESIGN; B) MULTIPLE ITEMS REQUIRE INDIVIDUAL TAG NUMBERS, MULTIPLE, KEYED MARKS OR MULTIPLE SHEETS AND SEPARATE DESIGNATIONS WHERE EACH ITEM OR GROUP OF ITEMS WILL BE INSTALLED; C) THE QUANTITY AND LOCATION OF EACH ITEM MUST BE DESIGNATED; D) INCLUDE PERFORMANCE CAPABILITIES CERTIFIED BY THE MANUFACTURER; E) EACH ITEM MUST BE REFERENCED TO THE SPECIFICATION PARAGRAPH USING THE COMPLETE PARAGRAPH NUMBER. ANY SUBMITTAL ITEM JUDGED AS NOT COMPLETE MAY CAUSE THE ENTIRE SUBMITTAL TO BE IMMEDIATELY REJECTED WITHOUT REVIEW. ONLY ONE RE-SUBMITTAL IS ALLOWED. SUBMITTAL DATA WHICH ARE MARKED "NO EXCEPTIONS TAKEN" DO NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY TO COMPLY WITH THE PLANS AND SPECIFICATIONS.
7. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL DETAILED LAYOUT DRAWINGS OF ALL WORK INCLUDING PIPING, DUCTWORK, ELECTRICAL, STRUCTURAL, ETC. PER THE SPECIFICATIONS, PRIOR TO ANY INSTALLATION WORK. A REGISTERED STRUCTURAL ENGINEER EMPLOYED BY THE CONTRACTOR SHALL PROVIDE THE DESIGN OF THE PIPE, DUCTWORK, AND EQUIPMENT SUPPORTS, BRACING AND ANCHORAGE BASED ON THE CONTRACTOR'S LAYOUT DRAWING AND THE APPROVED EQUIPMENT. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NEW STRUCTURAL STEEL MEMBERS AS REQUIRED TO SUPPORT THE NEW PIPING, DUCTWORK, CONDUITS, EQUIPMENT, ETC. CALCULATIONS FOR THE SUPPORT, BRACING AND ANCHORAGE OF ALL PIPING, DUCTWORK, EQUIPMENT, ETC. PREPARED BY THE CONTRACTOR'S REGISTERED STRUCTURAL ENGINEER, SHALL BE SUBMITTED WITH THE LAYOUT DRAWINGS. SEE THE SPECIFICATIONS. SMACNA GUIDELINES MAY BE USED FOR THE PIPING AND THE INTERIOR DUCTWORK. THE EQUIPMENT SHALL NOT BE INSTALLED BY THE CONTRACTOR UNTIL THE SHOP DRAWINGS AND STAMPED CALCULATIONS HAVE BEEN APPROVED.
8. PRELIMINARY AIR BALANCE REPORT. AT THE BEGINNING OF THE WORK IMMEDIATELY AFTER RECEIVING NOTICE TO PROCEED, THE CONTRACTOR SHALL MEASURE AND SUBMIT A PRELIMINARY BALANCE REPORT IN COMPLIANCE WITH THE SPECIFICATIONS FOR THE THREE AHU AREAS OF THIS PROJECT. EACH AHU, 6, 8 AND 10, SHALL BE BALANCED SEPERATELY. MEASURE ALL SUPPLY, RETURN AND EXHAUST AIR QUANTITIES. MEASURE EACH AHU IN FULL COOLING, MAX AIR FLOW, AT THE AHU AND MAX AIR FLOW AT ALL ZONES AND ALL DIFFUSERS; MEASURE THE DISCHARGE STATIC PRESSURE AT THE AHU AND THE SUCTION STATIC PRESSURE AT THE AHU. THEN EACH ZONE SHALL BE SET TO FULL REHEAT AND THE AIR QUANTITY MEASURED AT EACH OUTLET AND THE WATER FLOWS AND TEMPERATURES MEASURED AT EACH REHEAT BOX. THE EXISTING MECHANICAL DRAWINGS WILL BE PROVIDED BY THE FACILITY EBNGINEERING DEPARTMENT AT THE VA. SUBMIT A BLANK AIR BALANCE REPORT FOR APPROVAL PRIOR TO BEGINNING THE PRELIMINARY AIR BALANCE.
9. BEFORE ANY DEMOLITION OR CONSTRUCTION WORK IS BEGUN, THE CONTRACTOR AND THE CONTRACTING OFFICER'S REPRESENTATIVE SHALL SURVEY THE EXISTING CEILINGS TO BE REMOVED AND REPLACED FOR THEIR EXISTING CONDITION. THIS SURVEY WILL BE USED BY THE CONTRACTING OFFICER'S REPRESENTATIVE AT JOB COMPLETION TO DETERMINE WHICH RE-INSTALLED CEILING COMPONENTS MUST BE REPLACED WITH NEW.
10. BOX REPLACEMENT. SEE CONSTRUCTION DIRECTIVES. BOX AND THERMOSTST REPLACEMENT WORK MAY ONLY BE DONE WHEN THE SPACES ARE UNOCCUOIED WHICH WILL BE EVENINGS, NIGHTS AND WEEKENDS. AHU-6, RADIOLOGY OPERATES 24/7 THEREFORE PARTICULAR COORDINATION IS NECESSARY FOR THE OFF HOURS SO THAT A PROPER NUMBER OF ROOMS ARE AVAILABLE FOR USE. AHU-8, DENTAL HAS REGULAR OFFICE HOURS AND MAY BE AVAILABLE EARLIER IN THE AFTERNOON. AHU-10 ADMINISTRATION HAS REGULAR OFFICE HOURS.
11. THE CONTRACTOR SHALL NOT INTERRUPT THE AUTOMATIC SERVICE OF ANY ELEVATOR. ANY DAMAGE CAUSING A REPAIR CALL BY THE ELEVATOR SERVICE COMPANY SUCH AS REPLACEMENT OF BLOWN FUSES FROM THE ELEVATOR DOORS BEING HELD OPEN, SHALL BE PAID FOR BY THE CONTRACTOR. SECOND OFFENSES MAY RESULT IN TERMINATION OF THE CONTRACT.
12. THE CONTRACTOR SHALL NOT INTERFERE WITH THE LOCKED DOORS OF THE MEDICAL CENTER., THE CONTRACTOR IS EXPRESSLY FORBIDDEN FROM TAPING THE LATCH MECHANISM SUCH THAT THE DOOR CAN BE OPENED WITHOUT A KEY. THIS WOULD ESPECIALLY APPLY TO DOORS TO MECHANICAL OR ELECTRICAL ROOMS OR DOORS LEADING TO THE ROOF. ANY GENERAL CONTRACTOR OR SUBCONTRACTOR SUSPECTED OF SUCH ACTION WILL BE SUBJECT TO IMMEDIATE TERMINATION OF THEIR CONTRACT AT THE SOLE DISCRETION AND JUDGEMENT OF THE CONTRACTING OFFICER'S REPRESENTATIVE.
13. REQUEST APPROVAL FROM THE CONTRACTING OFFICER'S REPRESENTATIVE SEVEN DAYS IN ADVANCE FOR THE SHUTDOWN OF ANY EXISTING SYSTEM.
14. FINAL ADVANCE NOTICE OF 48 HOURS SHALL BE GIVEN TO THE CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO THE PROPOSED SHUTDOWN OF ANY SYSTEM.
15. THE CLOSING AND OPENING OF VALVES SHALL BE WITNESSED BY THE CONTRACTING OFFICER'S REPRESENTATIVE; NOTIFY LOCAL AUTHORITIES AS REQUIRED.
16. PROVIDE ADEQUATE FIRE PROTECTION IN THE ENTIRE CONSTRUCTION AREA FOR THE DURATION OF THE CONSTRUCTION PERIOD. REFER TO SPECIFICATION DIVISION I, "GENERAL REQUIREMENTS", "FIRE SAFETY REQUIREMENTS".
17. THE ENTIRE EXISTING FIRE PROTECTION SYSTEM SHALL BE RESTORED TO FULL OPERATION AT THE END OF EACH WORKING DAY. ALL EXISTING FIRE ALARMS AND FIRE EXITS AND ANY OTHER ASPECT OF THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN IN FULL OPERATION. THE COST OF RESPONSE TO ANY FALSE ALARM AS CHARGED BY ANY LOCAL FIRE DEPARTMENT SHALL BE PAID BY THE CONTRACTOR.
18. THE GENERAL NOTES ON THIS SHEET APPLY TO ALL THE DRAWING DISCIPLINES.
19. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE, ALTHOUGH NO ATTEMPT WAS MADE TO SHOW EVERY OFFSET, FITTING, BEAM, PIPE SUPPORT ETC. CHANGES REQUIRED TO FIT EQUIPMENT, PIPING AND DUCTWORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. ANY MAJOR DISCREPANCIES SHALL BE CLARIFIED PRIOR TO SUBMITTAL OF BID.
20. THE WORK INCLUDES ALL ITEMS OF THE SPECIFICATIONS.
21. VISIT THE SITE AND BE FULLY COGNIZANT OF ALL CONDITIONS PRIOR TO SUBMITTING BID. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO SUBMITTAL OF BID.
22. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO REVIEW ALL THE CONDITIONS OF THE BUILDING, SITE AND SURROUNDING AREA INCLUDING BUT NOT LIMITED TO ALL AREAS ENCOMPASSED BY THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL HAVE ACQUIRED COMPLETE SITE INFORMATION RELATIVE TO ALL NEW WORK PRIOR TO SUBMISSION OF HIS BID. THERE SHALL BE NO FUTURE CONSIDERATION TO THE CONTRACTOR FOR HIS FAILURE TO BECOME FULLY AWARE OF ALL EXISTING CONDITIONS AT THE SITE WHICH MAY IMPACT HIS INSTALLATION OF THE NEW WORK. THE CONTRACTOR SHALL FIELD VERIFY ANY QUESTIONABLE EXISTING FIELD CONDITIONS PRIOR TO SUBMITTAL OF HIS BID. VISITS TO THE JOB SITE SHALL BE BY APPOINTMENT WITH THE CONTRACTING OFFICER'S REPRESENTATIVE.
23. THE CONTRACTOR SHALL EXAMINE ALL THE DESIGN DRAWINGS, SHOP DRAWINGS AND AS_BUILT DRAWINGS AT THE FACILITY, OF THE EXISTING CONDITIONS PRIOR TO BIDDING AND PRIOR TO EXCAVATING OR CUTTING INTO BUILDING SURFACES TO AVOID DAMAGING ANY UTILITY, PIPE, CONDUIT, DUCT, ETC. OR STRUCTURAL MEMBER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUBSEQUENT DAMAGE AND THE COST OF REPAIR AND RESTORATION TO THE PRIOR CONDITION.
24. DO NOT BEGIN FABRICATION, CUT ANY MEMBERS OR BEGIN INSTALLATION UNTIL THE SUBMITTALS AND SHOP DRAWINGS HAVE BEEN APPROVED. ANY WORK CONSTRUCTED OR INSTALLED PRIOR TO THE APPROVAL OF SUBMITTALS AND SHOP DRAWINGS SHALL BE AT THE CONTRACTOR'S RISK AND SHALL BE REMOVED AND REINSTALLED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE AT THE REQUEST OF THE CONTRACTING OFFICER'S REPRESENTATIVE TO THE COMPLETE SATISFACTION OF THE CONTRACTING OFFICER'S REPRESENTATIVE.
25. DO NOT PENETRATE OR CUT ANY STRUCTURAL MEMBERS NOT SPECIFICALLY SHOWN ON THE DRAWINGS (E.G., JOISTS, BEAMS, ETC.). IF STRUCTURAL MEMBERS CONFLICT WITH ROUTING, CONTACT THE CONTRACTING OFFICER'S REPRESENTATIVE FOR DIRECTION BEFORE PROCEEDING. EXERCISE CAUTION IN CUTTING CONCRETE FLOORS AND WALLS TO AVOID EXISTING UTILITIES WHICH MAY BE LOCATED IN AND UNDER CONCRETE SURFACES.
26. THE CONTRACTOR SHALL PROVIDE NEW OPENINGS IN WALLS, FLOOR AND ROOF, AND PATCH EXISTING OPENINGS IN CONJUNCTION WITH THE DEMOLITION AND INSTALLATION OF THE NEW BUILDING COMPONENTS, INCLUDING MECHANICAL, PLUMBING, ELECTRICAL AND GENERAL CONTRACTOR'S ITEMS.
27. FOR ALL FLOOR, WALL, AND ROOF PENETRATION, VERIFY THE LOCATION OF THE (E) STRUCTURAL MEMBERS PRIOR TO DRILLING AND CUTTING. RELOCATE OPENINGS AS REQUIRED AND OFFSET DUCTS, PIPES, CONDUIT, ETC. AS APPROPRIATE. REVIEW THE STRUCTURAL DRAWINGS IN THE ENGINEERING OFFICE.
28. THE CONTRACTOR SHALL PROVIDE ALL ROOF AND EXTERIOR WALL OPENINGS, INCLUDING FRAMING, FLASHING, COUNTER FLASHING AND WATERPROOFING. THE CONTRACTOR SHALL PROVIDE ALL FLOOR AND WALL OPENINGS INCLUDING FRAMING, SLEEVES, ETC.
29. THE CONTRACTOR SHALL PROVIDE AT THE CONSTRUCTION SITE ONE SUPERINTENDENT TO CONSTANTLY SUPERVISE THE WORK AND SHALL KEEP THE SAME SUPERINTENDENT, FOREMAN AND WORKMEN ON THE JOB FROM COMMENCEMENT TO COMPLETION. ALL WORKMANSHIP OF THE ENTIRE JOB RELATING TO THIS PROJECT MUST BE CONTINUOUSLY ACCEPTABLE TO THE CONTRACTING OFFICER'S REPRESENTATIVE IN EVERY RESPECT. THE CONTRACTING OFFICER'S REPRESENTATIVE RESERVES THE RIGHT TO DEMAND THE WITHDRAWAL OF ANY WORKMAN WHO DOES NOT DO SATISFACTORY WORK AS DETERMINED BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
30. WHERE THERE IS A CONFLICT ON THE PLANS, SPECIFICATIONS, NOTES, GENERAL NOTES, REFERENCES, PUBLICATIONS, CODES, ETC. WITH RESPECT TO MATERIALS, PRODUCTS, METHODS, WORKMANSHIP, PROCEDURE, EXECUTION, ETC. THE MOST STRINGENT OR BENEFICIAL TO THE OWNER AS DETERMINED BY THE CONTRACTING OFFICER'S REPRESENTATIVE SHALL BE UTILIZED OR INSTALLED. NO RELIEF OR EXTRA PAYMENT SHALL BE MADE TO THE CONTRACTOR BECAUSE OF THE INTERPRETATION OF THE CONTRACTING OFFICER'S REPRESENTATIVE.
31. ALL WORK SHALL BE DONE WITH COMPLETE COMPLIANCE WITH THE PUBLISHED EDITIONS OF APPLICABLE CODES AND STANDARDS WHETHER STATUTORY OR NOT. ALL WORK SHALL BE INSTALLED TO COMPLY WITH THE UNIFORM BUILDING, MECHANICAL, PLUMBING, ELECTRICAL AND FIRE CODES, NATIONAL ELECTRICAL CODE, UNDERWRITER'S LABORATORY, INC., AMERICAN NATIONAL STANDARD INSTITUTE, INC., NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, BASIC ELECTRICAL REGULATIONS AND CODES AND STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). IF ANY PART OF THE INSTALLATION DOES NOT MEET CODE, NOTIFY THE CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO BEGINNING THE INSTALLATION. IF ANY PART OF THE PROJECT CANNOT BE INSTALLED TO CONFORM WITH THE PLANS AND/OR SPECIFICATIONS, NOTIFY THE CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO BEGINNING THE INSTALLATION.
32. ALL EXISTING DUCTWORK, PIPING CONDUIT AND MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT NOT TO BE REUSED OR REMAIN IN SERVICE SHALL BE REMOVED FROM THE MEDICAL CENTER. THE CONTRACTING OFFICER'S REPRESENTATIVE HAS THE OPTION TO RECLAIM ANY DEMOLISHED MATERIALS OR EQUIPMENT FOR THE GOVERNMENT IN WHICH CASE IT SHALL BE DELIVERED TO THE LOCATION DESIGNATED BY THE CONTRACTING OFFICER'S REPRESENTATIVE.
33. FOR EACH PHASE AND BEFORE INTERRUPTING EACH (E) UTILITY, DETERMINE, IN ADVANCE, IF ANY DOWNSTREAM SERVICE BEYOND THE CONSTRUCTION AREA OF THE PHASE, WILL BE INTERRUPTED AND PROVIDE A TEMPORARY SERVICE BYPASSING THE CONSTRUCTION AREA. DETERMINE ALL SUCH TEMPORARY SERVICES PRIOR TO SUBMITTING BID. THERE WILL BE NO FUTURE CONSIDERATION TO THE CONTRACTOR FOR ANY TEMPORARY SERVICES REQUIRED. PREPARE A DETAILED SHOP DRAWING SHOWING ALL OF THE EXISTING UTILITIES IN THEIR RELOCATED LOCATION AND ALL THE NEW HVAC SYSTEMS.
34. THE FLOOR AREAS BELOW OVERHEAD WORK, WHERE WELDING "HOT WORK" IS TO BE PERFORMED, SHALL BE CLEARED TO A MINIMUM DISTANCE OF 36 FEET BEYOND THE POINT DIRECTLY BELOW THE OVERHEAD "HOT WORK". ALL FLAMMABLE MATERIALS SHALL BE CLEARED TO A DISTANCE 50 FEET BEYOND THE POINT DIRECTLY BELOW THE OVERHEAD "HOT WORK".
35. ALL BRANCHES OF THE SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL HAVE VOLUME DAMPERS, EVEN IF NOT SPECIFICALLY SHOWN ON THE DRAWINGS. ALL BRANCHES IN RECTANGULAR DUCTWORK SHALL BE WITH VARIABLE EXTRACTORS. ALL VARIABLE EXTRACTORS SHALL HAVE GANGED, DOUBLE THICKNESS, AIRFOIL TURNING VANES AND AN ADJUSTABLE ROD WITH A LOCKING ADJUSTMENT. ALL BRANCHES IN ROUND DUCTWORK SHALL BE WYE FITTINGS WITH VOLUME DAMPERS IN THE MAIN AND THE BRANCH. ALL RECTANGULAR ELBOWS SHALL HAVE DOUBLE THICKNESS, AIRFOIL TURNING VANES. ALL ROUND ELBOWS SHALL BE FULL RADIUS ELLS.
36. ALL PIPING ELBOWS SHALL BE LONG RADIUS.
37. PROVIDE DUCT TRANSITIONS FROM THE EXISTNG DUCTWORK TO THE CONNECTIONS AT THE NEW BOXES. ALL DUCT DIMENSIONS STATED ARE NOMINAL INSIDE. THE DUCT SIZES AND BOXES ARE NOT SHOWN EXACTLY TO SCALE; USE SHOWN DIMENSIONS, SHOP DRAWINGS AND APPROVED EQUIPMENT SUBMITTALS TO LAYOUT THE NEW WORK.
38. EXISTING DUCTWORK, DOMESTIC COLD WATER PIPING, DOMESTIC HOT WATER PIPING, CHILLED AND HEATING HOT WATER PIPING, WASTE, VENT, FIRE SPRINKLER LINES, FIRE ALARM EQUIPMENT, ELECTRICAL CONDUIT, TELEPHONE CONDUIT, COMMUNICATION CONDUIT, PNEUMATIC TUBING, ETC., MAY HAVE TO BE RELOCATED TO FACILITATE THE INSTALLATION OF THE NEW WORK. THE CONTRACTOR SHALL DETERMINE ALL EXISTING SERVICES THAT REQUIRE RELOCATION PRIOR TO SUBMITTING HIS BID AND INCLUDE ALL COSTS IN THE BID. THERE WILL BE NO EXTRA COMPENSATION TO THE CONTRACTOR FOR THIS WORK.
39. THE CONTRACTOR IS HEREBY NOTIFIED THAT SOME WORK MAY BE REQUIRED OUTSIDE OF THE AREAS SHOWN ON THESE DRAWINGS. THIS COULD INCLUDE CONTROL MODIFICATIONS OR CONNECTIONS AT REMOTE LOCATIONS CONTROL PANELS, CPU'S, ETC.
40. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, TRANSITIONS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED. COORDINATE ALL THE WORK OF ALL THE TRADES TO INSURE THAT ALL DUCTS, PIPES, CONDUITS, ETC. DO NOT CONFLICT AND CLEAR STRUCTURAL AND ARCHITECTURAL MEMBERS.
41. THE CONTRACTOR SHALL PAY FOR ALL DAMAGE INCLUDING WATER DAMAGE TO PROPERTY AND EQUIPMENT CAUSED BY HIS WORK THROUGHOUT THE CONSTRUCTION AND WARRANTEE PERIOD.
42. ALL CEILING DEMOLITION WORK SHALL BE DONE AFTER NORMAL WORKING HOURS. THE INSTALLATION OF THE NEW CEILING SHALL BE DONE AFTER NORMAL WORKING HOURS. THE WORK AREA SHALL BE CLEANED BEFORE THE START OF EACH WORKING DAY.
43. REMOVE T-BARS AND 2X4 CEILING PANELS AS REQUIRED FOR THE DEMOLITION AND THE INSTALLATION OF THE NEW WORK. REINSTALL EXISTING OR REPLACE WITH NEW AS REQUIRED TO THE SATISFACTION OF THE CONTRACTING OFFICER'S REPRESENTATIVE. FOR THE BREAK ROOM IN RADIOLOGY SERVED BY AHU-6 AND ANY OTHER HARD CEILING AREA CUT AND DEMOLISH ENOUGH OF THE HARD CEILING TO DO THE WORK REQUIRED. REBUILD AND PATCH THE DEMOLISHED, FINISH AND PAINT TO MATCH EXISTING TO THE SATISFACTION OF THE COTR.
44. ALL VALVES, VOLUME DAMPERS, CONTROL DEVICES, VAR, ETC. SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
45. ALL UL LISTED EQUIPMENT SHALL BE INSTALLED AS PER LISTING OR LABELING. MAXIMUM FUSE SIZES MEANS FUSE PROTECTION REQUIRED.
46. PATCH AND PAINT TO MATCH EXISTING, ALL SURFACES DAMAGED BY THE DEMOLITION AND ALL OPENINGS NOT TO BE REUSED.
47. REPAIR DAMAGE TO CEILING, WALLS, ETC. TO THE SATISFACTION OF THE CONTRACTING OFFICER'S REPRESENTATIVE.
48. WHEN A DETAIL OR NOTE IS IDENTIFIED AS TYPICAL, THE CONTRACTOR IS TO APPLY THE DETAIL OR NOTE TO EVERY SIMILAR CONDITION, WHETHER OR NOT THE REFERENCED DETAIL OR NOTE IS REPEATED OR REFERENCED.
49. WHERE NO CONSTRUCTION DETAIL IS INDICATED, SUCH WORK SHALL BE SIMILAR TO COMPARABLE WORK DETAILED OR NOTED ELSEWHERE OR TO MATCH EXISTING CONDITIONS, SUBJECT TO THE APPROVAL OF THE CONTRACTING OFFICER'S REPRESENTATIVE.
50. ALL HOLES, VOIDS, AND DAMAGED OR UNEVEN SURFACES WHICH ARE CAUSED BY THE CONTRACTOR'S WORK AND WHICH REMAIN EXPOSED IN THE WALL, FLOOR, CEILING OR OTHER SURFACES SHALL BE PATCHED, REPAIRED, AND BROUGHT FLUSH WITH THE ADJACENT CONSTRUCTION. SUCH SURFACES, NOT CONCEALED BY THE NEW CONSTRUCTION, SHALL MATCH IN EVERY RESPECT THE EXISTING NON-DAMAGED CONSTRUCTION. REMOVE EXISTING UTILITIES BACK BEHIND EXISTING SURFACES AND CAP SO AS NOT TO INTERFERE WITH NEW PATCHES.
51. WHEREVER NEW WALL, FLOOR OR CEILING FINISHES ARE INDICATED, THE CONTRACTOR SHALL BRING EXISTING ELECTRICAL, MECHANICAL, PLUMBING AND OTHER BUILDING COMPONENTS FLUSH WITH THE NEW FINISHED SURFACES IF APPROPRIATE.
52. THE DEMOLITION SHALL INCLUDE ALL ASSOCIATED ANCHORAGES, HANGARS, SUPPORTS, BRACES, FASTENERS, MASTIC, MORTAR, LATH AND RELATED ITEMS. THE EXISTING SUBSTRATE INCLUDING CONCRETE, MASONRY, METAL FRAMING AND FURRING SHALL BE REPAIRED WHERE DAMAGED BY THE CONTRACTOR'S WORK.
53. PROVIDE ALL VALVES, INSTRUMENTS, FITTINGS, ETC. AS SHOWN ON THE PIPING DIAGRAMS, SCHEMATICS, ETC. IT IS NOT POSSIBLE TO SHOW ALL VALVE, INSTRUMENTS, ETC. ON THE PLANS, HOWEVER, SELECTED VALVES HAVE BEEN SHOWN FOR REFERENCE. ALL VALVES SHALL BE ACCESSIBLE FROM THE FLOOR OR FROM FIXED PLATFORMS.
54. THE LOCATION OF THE TERMINAL UNITS MAY BE CHANGED TO ALLOW FOR EXISTING CONDITIONS IF APPROVED BY THE CONTRACTING OFFICER'S REPRESENTATIVE. PROVIDE DUCT AND PIPING EXTENSIONS AS REQUIRED.
55. FOR ALL (E) VAV BOXES TO BE REPLACED WITH NEW VAV BOXES, INSTALL A NEW THERMOSTAT TO REPLACE THE EXISTING AT THE SAME LOCATION. INSTALL NEW WIRING AS REQUIRED FOR PROPER OPERATION OF THE NEW VAV BOX AND THERMOSTAT.
56. PROVIDE ALL LABOR AND MATERIALS TO INSTALL THE EQUIPMENT ACCORDING TO THE MANUFACTURERS INSTRUCTIONS AND TO INSURE THE EQUIPMENT WILL OPERATE AS DESIGNED.
57. ALL NEW FIRE ALARM DEVICES INSTALLED IN HVAC EQUIPMENT SUCH AS SMOKE DETECTORS, SMOKE DAMPERS, FIRE/SMOKE DAMPERS, ETC., SHALL BE CONNECTED TO THE MAIN FIRE ALARM PANEL.
58. ALL EQUIPMENT AND MATERIALS SUBJECT TO THE WEATHER THAT ARE NOT FACTORY PAINTED SHALL BE FIELD PAINTED AND WEATHER PROOFED WITH PRIMER, AND TWO COATS OF EXTERIOR PAINT. SEE THE SPECIFICATIONS. MATCH THE COLOR OF THE EXISTING BUILDING EXTERIOR. THE COLOR AND QUALITY OF THE PAINT IS SUBJECT TO THE APPROVAL OF THE CONTRACTING OFFICER'S REPRESENTATIVE. SUBMITTAL REQUIRED.
59. PRESSURE TEST ALL PIPE JOINTS AND OBTAIN ACCEPTANCE OF THE CONTRACTING OFFICER'S REPRESENTATIVE BEFORE INSULATING. PROVIDE ALL VALVES, FITTINGS, GAUGES, ETC., AS REQUIRED TO TEST ALL OR PART OF ANY PIPING SYSTEM.
60. TEST ALL PIPE, DUCT AND EQUIPMENT HANGARS AND SUPPORTS TO 125% OF THEIR INSTALLED OPERATING WEIGHT AND SECURE APPROVAL OF THE CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO INSTALLATION OF THE SUPPORTED ITEM.
61. THE CONTROLS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR MAKING THE CONTROL SYSTEM COMPLETE AND FULLY OPERABLE. THE CONNECTION TO THE EXISTING CONTROL SYSTEM SHALL BE COMPLETE SUCH THAT ALL NEW MONITORING AND CONTROL POINTS ARE RECOGNIZED BY THE EXISTING CONTROL SYSTEM AND THAT ALL NEW POINTS CAN BE READ, ACTUATED AND RESET FROM THE EXISTING FRONT END AND VICE-VERSA. THE ENGINEER SHALL BE NOTIFIED WHEN EACH PHASE OF THE SYSTEM HAS BEEN COMPLETELY CHECKED OUT, ADJUSTED, CALIBRATED AND PUT IN FINAL WORKING CONDITION WITH ALL THE TROUBLESHOOTING COMPLETED. A SUBSEQUENT JOBSITE MEETING WILL BE SCHEDULED WITH TWO WEEKS NOTICE AT WHICH TIME THE CONTROLS CONTRACTOR WILL DEMONSTRATE THE OPERATION OF THE CONTROL SYSTEMS TO ALL CONCERNED. IF ANY ITEMS OF THE CONTROL SEQUENCE CANNOT BE SUCCESSFULLY DEMONSTRATED OR REQUIRE FURTHER TROUBLESHOOTING, A SUBSEQUENT CONTROLS INSPECTION WILL BE REQUIRED AND WILL BE AT THE CONTRACTOR'S EXPENSE. THIS PROVISION SHALL BE A CONDITION OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE PREPARED TO DEMONSTRATE ALL ITEMS IN THE SEQUENCE OF OPERATION. INTERIM CONTROLS DEMONSTRATIONS AND VERIFICATIONS WILL BE REQUIRED AT THE COMPLETION OF EACH AHU PHASE. AND AT THE COMPLETION OF THE PROJECT, FOUR TOTAL.
62. CONDUCT A PRELIMINARY AIR BALANCE FOR EACH AHU PHASE AND ISSUE A BALANCE REPORT BEFORE BEGINNING ANY WORK ON THAT PHASE. SEE NOTE # 8. WHEN THE WORK ON THAT PHASE IS COMPLETE, CONDUCT THE FINAL AIR AND WATER BALANCING TO MATCH THE CONDITIONS MEASURED IN THE PRELIMINARY MEASURING PHASE. WHEN THE BALANCING IS COMPLETE AND ALL ADJUSTMENTS HAVE BEEN MADE, THE ENGINEER SHALL BE NOTIFIED. A SUBSEQUENT JOBSITE MEETING WILL BE SCHEDULED WITH TWO WEEKS NOTICE AT WHICH TIME THE BALANCING SUBCONTRACTOR WILL DEMONSTRATE THE FLOW QUANTITIES, TEMPERATURES, PRESSURES, ETC. AT RANDOM LOCATIONS AS DIRECTED BY THE ENGINEER AND THE COTR. THE CONTRACTOR SHALL MAKE ANY ADJUSTMENTS REQUESTED BY THE COTR TO DELIVER MORE OR LESS AIR TO ANY ZONE, AT HIS DISCRETION, SUBMIT THE FINAL BALANCE REPORT FOR THAT AHU PHASE FOR REVIEW AND ACCORDING TO THE SPECIFICATIONS. INTERIM AIR BALANCE DEMONSTRATIONS, VERIFICATIONS AND REPORTS WILL BE REQUIRED AT THE COMPLETION OF EACH AHU PHASE., AT JOB COMPLETION, SUBMIT THE FINAL REPORT FOR ALL THREE PHASES.
63. CONDUCT A PRELIMINARY WATER BALANCE OF EACH ZONE IN EACH AHU PHASE. SEE NOTE # 8. BEFORE BEGINNING ANY OTHER IN THAT PHASE. AT THE CONCLUSION OF THE WORK OF EACH PHASE, BALANCE THE WATER FLOW AT NEW AND EXISTING DEVICES TO THE WATER FLOW QUANTITIES SHOWN. PROVIDE NEW BALANCING VALVES IN NEW AND EXISTING PIPING AS REQUESTED BY THE BALANCING CONTRACTOR TO ACHIEVE THE NEW DESIGN GPM'S. A SUBSEQUENT JOBSITE MEETING WILL BE SCHEDULED WITH TWO WEEKS NOTICE AT WHICH TIME THE BALANCING SUBCONTRACTOR WILL DEMONSTRATE THE FLOW QUANTITIES, TEMPERATURES, PRESSURES, ETC. AT RANDOM LOCATIONS AS DIRECTED BY THE ENGINEER, TO ALL CONCERNED. SUBMIT THE FINAL BALANCE REPORT FOR REVIEW AND ACCORDING TO THE SPECIFICATIONS. INTERIM WATER BALANCE DEMONSTRATIONS, VERIFICATIONS AND REPORTS WILL BE REQUIRED AT THE END OF EACH AHE PHASE.
64. THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS DEPICTING ALL SYSTEMS AND EQUIPMENT AS INSTALLED AND SUBMIT FULL SIZE VELLUMS AND CD'S IN AUTOCAD LATEST VERSION. THE PRESENTATION OF THE AS-BUILTS, THE FINAL, APPROVED CONTROL DRAWINGS, EQUIPMENT LIST AND SEQUENCES OF OPERATION, AND THE FINAL AIR AND WATER BALANCE REPORTS SHALL BE A CONDITION OF FINAL PAYMENT.
65. THE CONTRACTOR SHALL GUARANTEE TO REPAIR OR REPLACE AT HIS OWN EXPENSE ANY PART OR PORTION OF THE INSTALLED OR MODIFIED SYSTEM THAT DEVELOPS ANY DEFECTS OR MALFUNCTIONS DUE TO FAULTY MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE (NOT THE DATE OF BENEFICIAL USE) AND AS REQUIRED BY THE SPECIFICATIONS.

CONSTRUCTION DIRECTIVES

A. GENERAL

1. ALL WORK IN THE OCCUPIED AREAS MUST BE DONE IN STRICT ACCORDANCE WITH THE INFECTION PREVENTION MEASURES SPECIFIED IN SECTION 01 00 00, "GENERAL REQUIREMENTS".

2. ALL TERMINAL UNITS SHALL BE REPLACED WITH NEW TERMINAL UNITS INCLUDING NEW CONTROLS. ALL TERMINAL UNITS ARE LOCATED ABOVE THE CEILING. ALL TERMINAL UNITS SHALL BE REPLACED DURING OFF HOURS.

3. ALL WORK SHALL BE DONE THROUGH THE CEILING BY REMOVING LAY-IN CEILING TILES; IN A FEW INSTANCES, IT MAY BE NECESSARY TO REMOVE TEE-BARS, HARD CEILING, WALL STRUCTURE OR OTHER EXISTING CONSTRUCTION TO GET PROPER ACCESS TO THE TERMINAL UNITS FOR THE REPLACEMENT.

4. IN THOSE AREAS SERVED BY AHU-6 RADIOLOGY AND AHU-8 DENTAL, ALL WORK MUST BE DONE IN A CONTAINED SPACE. THIS MAY BE A PORTABLE CONTAINMENT THAT IS MOVED AND RE-ASSEMBLED AT EACH LOCATION OR A SEMI-PERMANENT CONTAINMENT CONSTRUCTED FROM NORMAL BUILDING MATERIALS. IN EITHER CASE, THE CONTAINMENT MUST BE AIR TIGHT SUCH THAT WHEN THE CEILING IS OPENED, NO AIR, PARTICLES, DUST, DEBRIS, ETC. MAY ESCAPE INTO THE SURROUNDING SPACES. A HEPA FILTERED EXHAUST FAN SHALL CONTINUOUSLY EXHAUST THE CONTAINMENT AND DISCHARGE CLEAN AIR OUTSIDE THE CONTAINMENT AND TO OUTSIDE THE BUILDING. THE CONTAINMENT SHALL BE SET UP AND THE WORK DONE QUICKLY ON A PARTICULAR BOX AND THE CONTAINMENT DIS-ASSEMBLED. THE CONTAINMENT SHALL HAVE A SEALABLE WORK DOOR THROUGH WHICH WORKERS, LADDERS, TOOLS, MATERIALS, EQUIPMENT, DEBRIS BAGS, ETC. SHALL ACCESS AND EGRESS; THE WORK DOOR SHALL A DOUBLE DOOR AND SHALL BE CONSTRUCTED SUCH THAT OPENING THE WORKDOOR SHALL NOT ALLOW AIR, DUST, PARTICLES, ETC. TO ESCAPE INTO THE SURROUNDING SPACES.

5. THE POWER AND THERMOSTAT WIRING ARE AN INTEGRAL PART OF EACH BOX RETROFIT AND A CONTAINMENT SHALL BE USED WHENEVER THE CEILING IS OPENED TO DO THIS WORK.

B. THE CONTAINMENT:

1. EACH CONTAINMENT SHALL BE HEPA FILTERED "NEGATIVE PRESSURE" (-0.02" W.G. & 4 ACH)

2. EACH CONTAINMENT SHALL BE EXHAUSTED INTO THE BUILDING EXHAUST SYSTEM. THIS MAY BE WAIVED AND THE EXHAUST DISCHARGED INDOORS IF THE INFECTION CONTROL OFFICER APPROVES.

3. EACH CONTAINMENT SHALL INCLUDE ISOLATION (CRITICAL) BARRIERS WITH 2 FIRE RETARDANT POLY LAYERS.

C. BEFORE CONSTRUCTION:

1. THE CONTRACTOR SHALL PRESENT QUALIFICATIONS FOR TWO PREVIOUS SIMILAR PROJECTS AND SHALL HAVE ALL INSURANCE TO MEET VA REQUIREMENTS.

2. THE CONTRACTOR SHALL NOTIFY THE COTR 7 DAYS BEFORE THE START OF RENOVATION SO THAT THE COTR CAN NOTIFY THE DEPARTMENT HEAD AND THE INFECTION CONTROL OFFICER PRIOR TO START OF WORK WITH LOCATION, DATES, AND THE SPECIFICS OF THE WORK TO BE PERFORMED. THE INFECTION CONTROL OFFICER WILL ASSESS THE RISK AND RECOMMEND ADDITIONAL PRECAUTIONS IF ANY ARE NEEDED.

3. THE CONTRACTOR SHALL EDUCATE ALL CONSTRUCTION PERSONNEL WHO WILL BE IN THE CONSTRUCTION AREA ON THE IMPORTANCE OF BARRIER CONTAINMENT FOR THE WORK AREA AND THE METHODS OF ERECTION OF SUCH CONTAINMENT.

4. ALL CONSTRUCTION BARRIERS SHOULD BE ASSEMBLED BY QUALIFIED PERSONNEL USING PROPER MATERIALS AND SEALERS. HEPA FILTER VACUUMS SHALL BE USED INSIDE THE CONTAINMENT TO CREATE A NEGATIVE-PRESSURE WITHIN THE CONTAINMENT TO PREVENT SPREAD OF CONSTRUCTION DUST. STICKY MATS SHOULD BE PLACED ON THE FLOOR IMMEDIATELY OUTSIDE THE ENTRANCE TO THE CONTAINMENT.

D. DURING CONSTRUCTION:

1. DISCOURAGE TRAFFIC THROUGH CONSTRUCTION AREAS AS MUCH AS POSSIBLE. RESTRICT ENTRY TO CONTAINMENT.

2. PERSONS WALKING THROUGH CONSTRUCTION AREA SHOULD AVOID HITTING BARRIERS AND DISSEMINATING DUST.

3. COVER GOWNS SHOULD BE WORN BY PERSONS WALKING THROUGH AREAS WITH CONSIDERABLE DUST.

4. DECONTAMINATE PEOPLE AND ARTICLES INSIDE THE CONTAINMENT AREA WITH A HEPA FILTERED PORTABLE VACUUM BEFORE EXITING.

5. THE CONTRACTOR'S SUPERINTENDENT SHALL PROVIDE CONSTANT MONITORING OF HIS EMPLOYEES AND BE IN DAILY COMMNUNICATION WITH THE INFECTION CONTROL OFFICER.

6. ARTICLES REMOVED FROM CONSTRUCTION AREA MUST BE COVERED IN PLASTIC AND WIPED DOWN TO AVOID DUST CONTAMINATION.

7. WORK SITES SHOULD BE CLEANED ON A DAILY BASIS. CONSTRUCTION AT INDIVIDUAL SITES SHOULD BE COMPLETED AND CLEANED BEFORE WORK IS BEGUN AT THE END OF THE NIGHT SHIFT AND THE BEGINNING IF THE DAY AT THE NEXT SITE; E.G., VACUUM IMMEDIATELY AFTER DEMOLITION IN ORDER TO ALLOW LESS TIME FOR EXPOSURE TO DUST. SPECIAL PERMISSION MUST BE OBTAINED FROM THE COTR TO ALLOW A CONTAINMENT TO REMAIN IN PLACE DURING THE DAY.

8. WET MOP AND/OR VACUUM TWICE PER 8-HOUR PERIOD WITH HEPA FILTERED PORTABLE VACUUM EXTERIOR SURFACES BEFORE LEAVING WORK AREA DAILY.

9. PLACE DUST-MAT AT ENTRANCE AND EXIT OF CONTAINMENT AND REPLACE OR CLEAN WHEN NO LONGER EFFECTIVE.

10. ISOLATE HVAC SYSTEM IN AREAS WHERE WORK IS BEING PERFORMED.

11. MAINTAIN BARRIER INTEGRITY.

12. CLOSE DOORS AND INSTALL PROJECT SIGN.

13. ESTABLISH TRAFFIC PATTERNS THAT MINIMIZE EXPOSURE TO HOSPITAL PERSONNEL.

14. QUICKLY DRY WATER SPILLS.

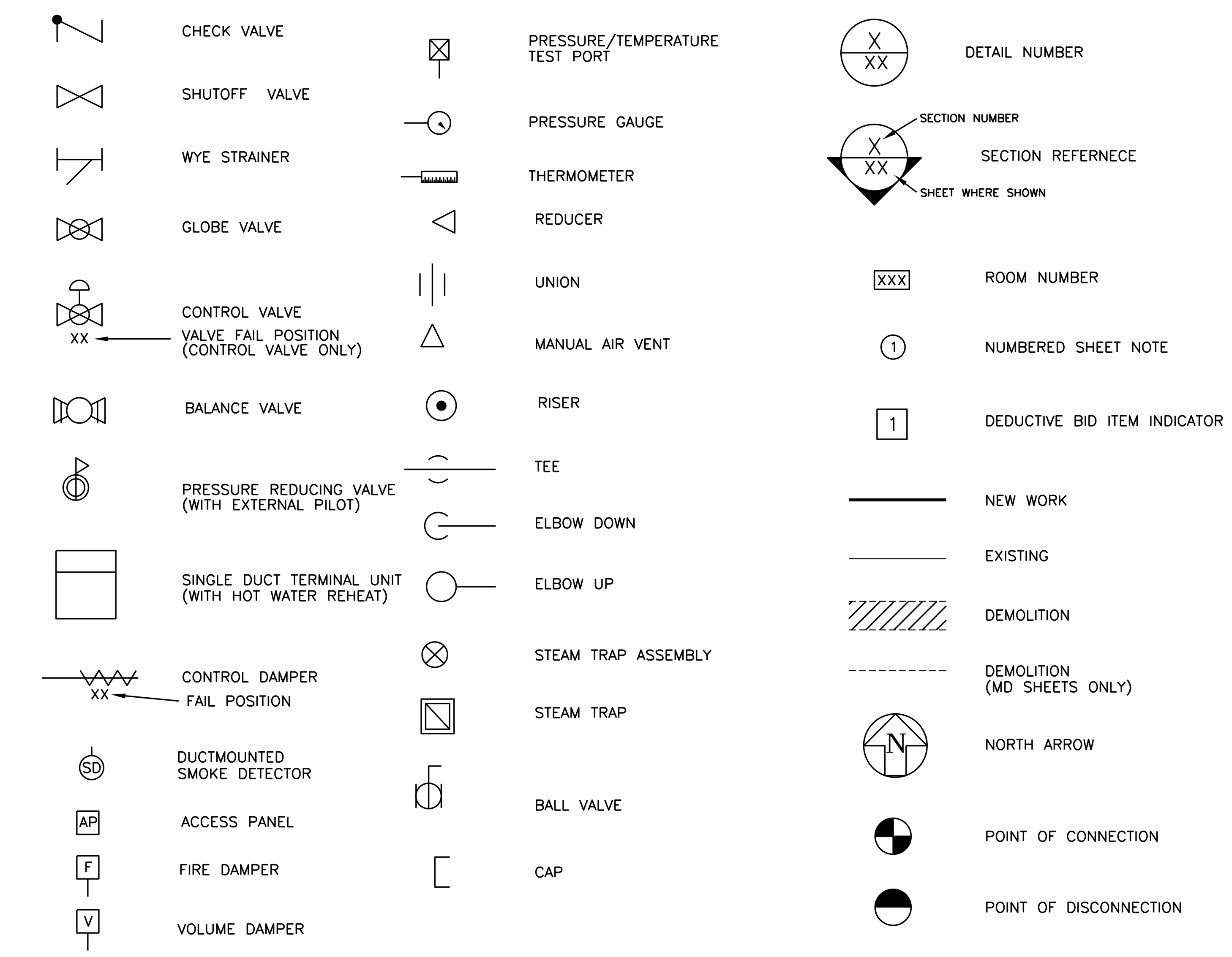
E. AFTER CONSTRUCTION

1. THOROUGHLY CLEAN CONSTRUCTION AREA.

2. REMOVE BARRIER MATERIALS CAREFULLY TO MINIMIZE SPREADING OF DIRT, DUST, AND DEBRIS ASSOCIATED WITH CONSTRUCTION. BARRIER MATERIAL SHOULD BE WET WIPED, HEPA VACUUMED OR WATER MISTED PRIOR TO REMOVAL.

SYMBOLS

SEE CONTROLS AND ELECTRICAL SHEETS FOR ADDITIONAL SYMBOLS



BID ITEM DESCRIPTIONS

1 DEDUCTIVE BID ITEM #1
2ND FLOOR TERMINAL UNITS

2 DEDUCTIVE BID ITEM #2
3RD FLOOR TERMINAL UNITS

3 DEDUCTIVE BID ITEM #3
REPLACEMENT OF THE 77-AC8 INTERNALLY INSULATED HORIZONTAL DUCT MAINS.

PHASING

PHASE 1. AHU-6

PHASE 1.1. ACTIVATE TEMPORARY AHU. CONSTRUCT A NEW ROOF PENETRATION AND CURB TO BE USED AS A POINT OF ENTRY FOR THE TEMPORARY SUPPLY AND RETURN DUCTS (36" ROUND, EACH) IN THE TEMPORARY PHASE AND FOR THE EXHAUST AIR DUCT FOR THE FINAL PHASE (SEE NOTE 1). INSTALL ROOFTOP DUCTWORK FROM TEMPORARY AHU ACROSS ROOF, THROUGH SLEEVES IN THE CURB CAP AND ACROSS THE MECHANICAL ROOM TO THE POC'S TO THE EXISTING DUCT SYSTEMS. PREPARE THE POC'S, DUCT TRANSITIONS ETC. FOR THE CHANGEOVER. SCHEDULE THE CHANGEOVER FOR OFF HOURS. CHANGE OVER FROM EXISTING AHU-6 TO TEMPORARY UNIT.

PHASE 1.2. DEMOLISH EXISTING AHU-6. INSTALL NEW AHU-6. PARTIALLY COMMISSION NEW UNIT.

PHASE 1.3. CHANGE OVER TO THE NEW UNIT ON OFF HOURS. DE-ACTIVATE TEMPORARY UNIT. REMOVE TEMPORARY CONECTIONS AND DUCTWORK AND ELECTRICAL, (IF REQUESTED BY COTR). FINISH THE CONSTRUCTION OF THE EXHAUST AIR DUCT THROUGH THE NEW ROOF OPENING. COMPLETE COMMISSIONING OF THE NEW AHU-6

NOTE 1. NEW ROOF CURB.

TEMPORARY PHASE. THE NEW ROOF CURB WILL SERVE AS THE POINT OF ENTRY OF THE 36" ROUND, TEMPORARY, SUPPLY AND RETURN DUCTS. CONSTRUCT THE CURB APPROXIMATELY 80" X 40" NET FREE DIMENSIONS INSIDE SO THAT THE FREE AREA WILL ACCOMMODATE THE TWO INSULATED TEMPORARY DUCTS. CONSTRUCT A SHEET METAL CAP WITH TWO 36" DIAMETER SLEEVES FOR THE NEW TEMPORARY DUCTS. FLASH THE CONNECTION OF THE TEMPORARY DUCT TO THE SLEEVES, WATERTIGHT.

FINAL PHASE. REMOVE THE TEMPORARY DUCTS AND THE SHEET METAL CAP. INSTALL A DUCT SLEEVE FROM THE CURB DOWN INTO THE MECHANICAL ROOM. INSTALL THE NEW EXHAUST AIR HOOD ON THE CURB. CONNECT THE EXHAUST AIR DUCT TO THE DUCT SLEEVE ON THE BOTTOM OF THE CURB .

PHASE 2 AHU-8 AND PHASE 3 AHU-10.

PREPARE FOR THE CONCURRENT DEMOLITION OF THE AHU (AC-8, 10) AND DEMOLITION OF LINED SUPPLY AND RETURN DUCTWORK (AC-8 ONLY) IN CEILING SPACE. SCHEDULE DEMOLITION AND NEW CONSTRUCTION FOR OFF HOURS, I.E., TO BEGIN ON A FRIDAYAFTERNOON/EVENING AND PROCEED WITH DOUBLE SHIFTS OVER THE WEEKEND AND THEN ON MONDAY NIGHT AND SUBSEQUENT NIGHTS FROM 5PM TO 5 AM UNTIL THE WORK IS COMPLETED. WITH LIMITED TEMPORARY AIR, THIS WORK SHALL BE SCHEDULED TO BE COMPLETED IN THE SHORTEST POSSIBLE TIME.

TEMPORARY AIR CONDITIONING

DURING THE EXECUTION OF THESE PHASES, TEMPORARY AIR CONDITIONING AND/OR HEATING SHALL BE PROVIDED DURING SERVICE INTERRUPTIONS LASTING LONGER THAN 4 HOURS WHICH OCCUR DURING THE FACILITY OPERATING HOURS. TEMPORARY EQUIPMENT SHALL CONSIST OF PORTABLE AIR CONDITIONERS OR HEAT PUMP UNITS OR FAN POWERED ELECTRIC HEAT AND SHALL INCLUDE ALL NECESSARY ACCESSORIES INCLUDING DISCHARGE AND INLET ADAPTERS AND PLENUMS, FLEXIBLE DUCTING, HOSES, PLUG-IN CONDENSATE PUMPS, POWER WIRING, ETC. SCHEDULED SERVICE INTERRUPTIONS AND THE PROVISION OF TEMPORARY FACILITIES SHALL BE COORDINATED WITH THE CONTRACTING OFFICER'S REPRESENTATIVE AND THE END-USERS A MINIMUM OF TWO WEEKS IN ADVANCE. THE SETUP OF TEMPORARY FACILITIES INCLUDING ANY NECESSARY CEILING WORK SHALL BE ACCOMPLISHED DURING OFF HOURS.

FOR THOSE ROOMS WHICH UTILIZE EXHAUST, THE CONDENSER (OR EVAPORATOR IF UTILIZING HEAT PUMPS IN HEATING MODE) SHALL BE DISCHARGED INTO THE EXISTING EXHAUST GRILLES.

FOR THOSE ROOMS WHICH UTILIZE RETURN AIR, THE CONDENSER DISCHARGE SHALL BE EXPELLED TO THE FOLLOWING LOCATIONS IN ORDER OF PREFERENCE AND WITH THE APPROVAL OF THE CONTRACTING OFFICER'S REPRESENTATIVE: ADJACENT EXTERIOR WINDOWS UTILIZING BLANK-OFF PANELS AND DUCT ADAPTERS, NEARBY GENERAL EXHAUST GRILLES OR HOODS, DIRECTLY INTO THE CEILING SPACE.

UNIT 77-AC8, DENTAL CLINIC

AT A MINIMUM TEMPORARY AIR CONDITIONING AND/OR HEATING SHALL BE PROVIDED FOR AT LEAST THE FOLLOWING SPACES: TWO GENERAL OPERATORIES, ONE ORAL SURGERY, THE DENTAL LAB AND CASTING AREA, ONE HYGIENE ROOM, ONE EXAM ROOM, AND TWO GENERAL OFFICES. TOTAL 8 AREAS.

UNIT 77-AC10, IRM AREA

AT A MINIMUM TEMPORARY AIR CONDITIONING / HEATING SHALL BE PROVIDED FOR AT LEAST THE FOLLOWING SPACES: FOUR GENERAL OFFICES. TOTAL 4 AREAS.

PHASE 4 TERMINAL UNITS FOR AHU6 (30)

PHASE 5 TERMINAL UNITS FOR AHU-8 (16)

PHASE 6 TERMINAL UNITS FOR AHU-10 (12).

ON OFF HOURS, DRAIN THE HOT WATER PIPING AND INSTALL ISOLATION VALVES IN THE SUPPLY AND RETURN PIPING AT EACH TERMINAL UNIT. REFILL THE SYSTEM AND PREPARE TO INSTALL ALL OF THE NEW BOXES.

ALL BOX REPLACEMENTS SHALL BE DONE DURING OFF HOURS. THE WORK SHALL BE SCHEDULED SO THAT ALL CEILINGS ARE CLOSED AND ALL BOXES ARE OPERATIONAL AT THE BEGINNING OF THE NEXT HOSPITAL DAY SHIFT, I.E., ONCE A BOX REPLACEMENT IS STARTED, IT MUST BE FINISHED BY THE TIME THE NEXT HOSPITAL SHIFT BEGINS.

ABBREVIATIONS

AF	AFTER-FILTER
AHU	AIR-HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AS	AIR SEPARATOR
B-AAC	BACNET ADVANCED APPLICATION CONTROLLER
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CKT	CIRCUIT
CONC	CONCRETE
CP	CONTROL PANEL
CW	COLD WATER
DA	DISCHARGE AIR
DEG	DEGREE
DIA	DIAMETER
DISCH	DISCHARGE
DN	DOWN
DPR	DAMPER
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EFF	EFFICIENCY
EQUIP	EQUIPMENT
EWT	ENTERING WATER TEMPERATURE
F&T	FLOAT AND THERMOSTATIC
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FT	FEET
GAL	GALLON
GPM	GALLONS PER MINUTE
GRD	GROUND
GWB	GYPSUM WALL BOARD
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSEPOWER
HPS	HIGH PRESSURE STEAM
HR	HOUR
HW	HOT WATER
IFB	INTEGRAL FACE AND BYPASS
IN	INCHES
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LPR	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
MA	MIXED AIR
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS
MECH	MECHANICAL
MFG	MANUFACTURER
MIN	MINIMUM
MM	MILLIMETERS
MPR	MEDIUM PRESSURE RETURN
MPS	MEDIUM PRESSURE STEAM
(N)	NEW
NC	NOISE CRITERIA
NIT	NOT IN CONTACT
NUM	NUMBER
NOM	NOMINAL
OA	OUTSIDE AIR
OC	ON CENTER
OSA	OUTSIDE AIR
PF	PRE-FILTER
PHC	PRE-HEAT COIL
POC	POINT OF CONNECTION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
REQD	REQUIRED
REV	REVERSE
RF	RETURN FAN
RH	REHEAT
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SH	STEAM HUMIDIFIER
SIM	SIMILAR
SF	SUPPLY FAN
SP	STATIC PRESSURE
SP. GR.	SPECIFIC GRAVITY
TCP	TEMPERATURE CONTROL PANEL
TU	TERMINAL UNIT
TYP	TYPICAL
V	VOLTS
VA	VOLT AMP
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER COLUMN
WPD	WATER PRESSURE DROP

SCALE: 3/4"=1'-0" (0 2 4 8 12)
SCALE: 1/2"=1'-0" (0 2 4 8 12)
SCALE: 1/4"=1'-0" (0 2 4 8 12)
SCALE: 1/8"=1'-0" (0 2 4 8 12)

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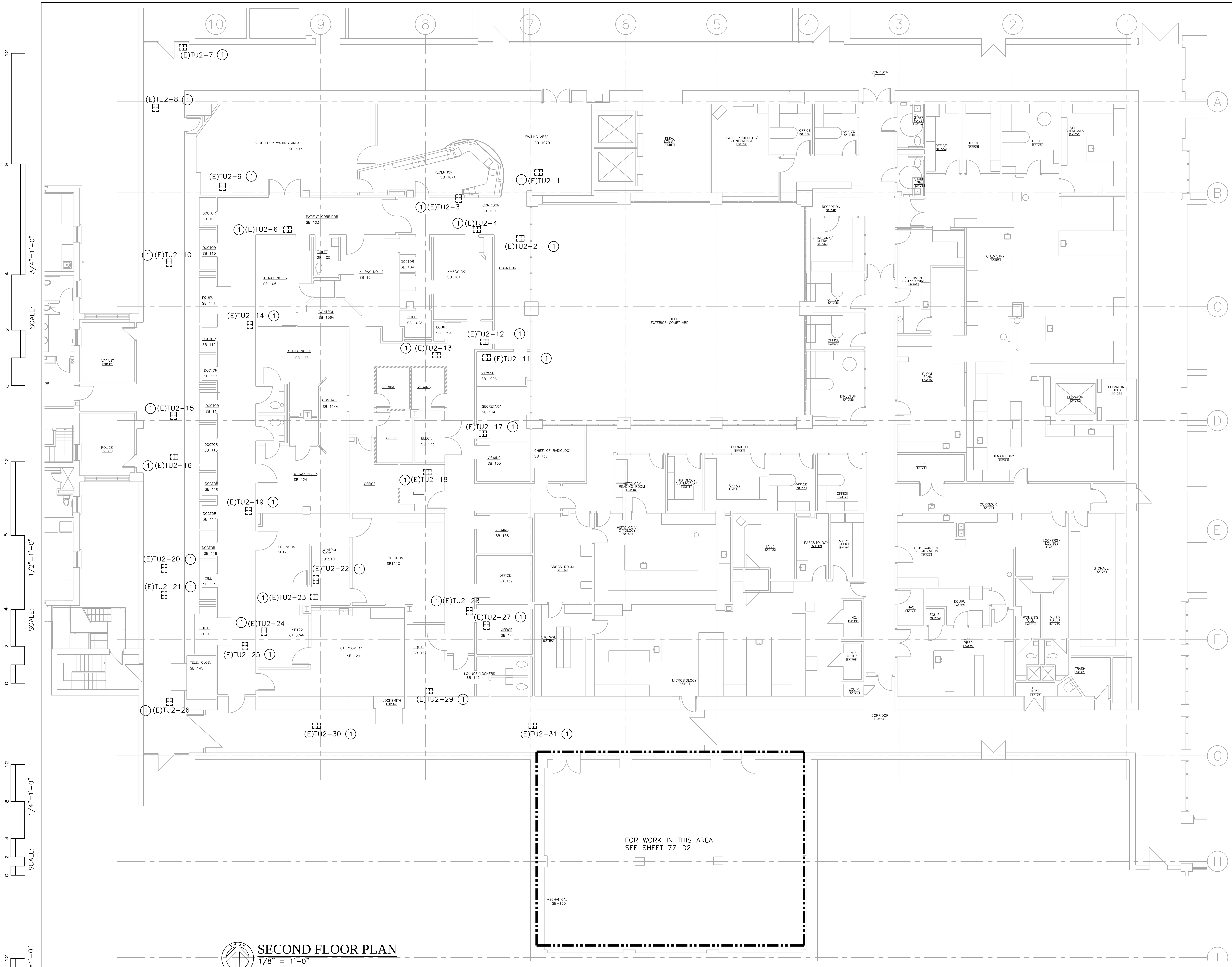
Drawing Title: GENERAL NOTES, PHASING, CONSTRUCTION DIRECTIVES, SYMBOLS, ABBREVIATIONS

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Drawn: BMA
Checked: PM
Building Number: 77
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Date: 4/24/12
Project No.: 621-11-127
Drawing No. GI-2
Dwg 2 of 20

Department of Veterans Affairs



SECOND FLOOR PLAN
1/8" = 1'-0"

NUMBERED NOTES (X)

[1] 1. DEMOLISH (E) TERMINAL UNIT. DEMOLISH (E) INLET AND OUTLET DUCTWORK AS REQUIRED FOR INSTALLATION OF NEW TERMINAL UNIT. DEMOLISH (E) VALVES. CAP (E) HHW PIPING TEMPORARILY. DEMOLISH (E) THERMOSTAT. DEMOLISH (E) PNEUMATIC TUBING BACK TO (E) TCP IN ROOM SB-160..

GENERAL NOTES

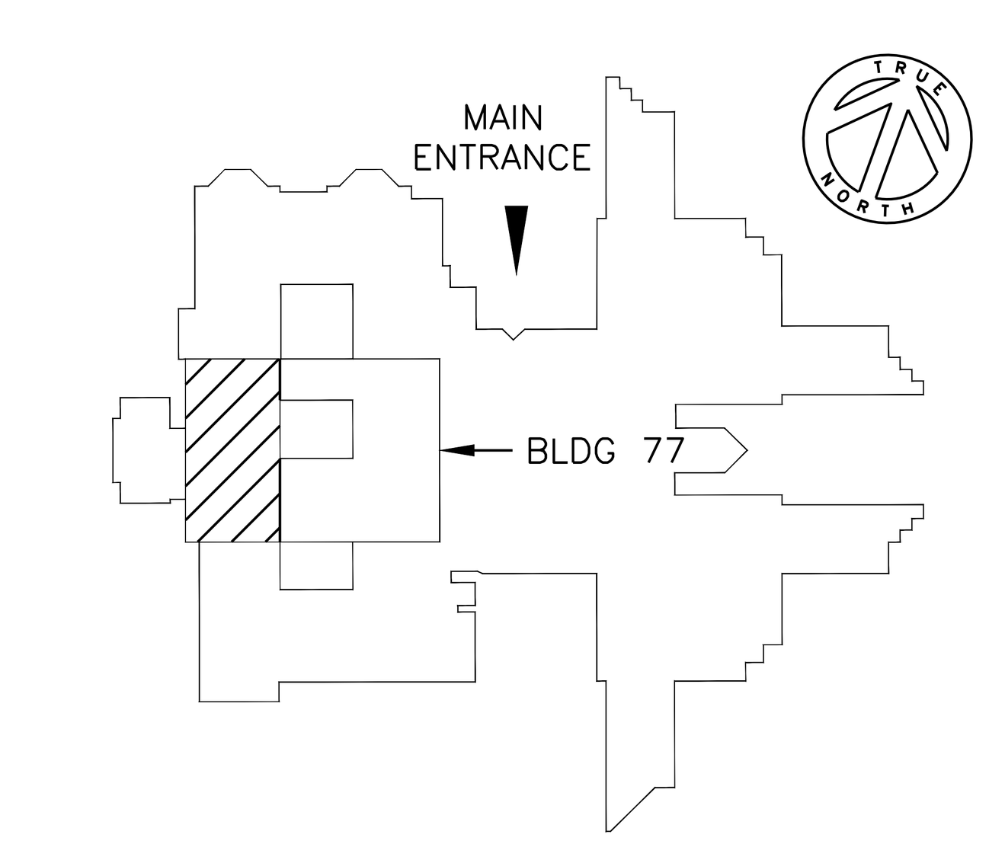
1. NOT ALL EXISTING UTILITIES LOCATED IN THE CEILING SPACE ARE SHOWN ON THE PLANS. UTILITIES NOT SHOWN INCLUDE BUT ARE NOT LIMITED TO POWER AND COMMUNICATIONS WIRING, AND CONDUIT, CABLE TRAYS, MEDICAL GAS, PLUMBING SERVICES, ETC. A CERTAIN QUANTITY OF THE EXISTING UTILITIES WILL HAVE TO BE RELOCATED AND/OR DEMOLISHED IN ORDER TO INSTALL THE NEW WORK. THE CONTRACTOR SHALL SURVEY THE SITE PRIOR TO BID AND INCLUDE IN HIS PROPOSAL A NECESSARY SUM AS REQUIRED FOR THE RELOCATION AND OR DEMOLITION OF EXISTING UTILITIES. ANY EXISTING UTILITIES WHICH ARE NO LONGER IN SERVICE (AS APPROVED BY THE VA) SHALL BE COMPLETELY DEMOLISHED IN THE AREA OF WORK.
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. ALL WORK ON THIS SHEET IS PHASE 4.

SYMBOLS

[X] DEDUCTIVE BID ITEM INDICATOR



KEY PLAN
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Drawing Title: DEMOLITION - 2ND FLOOR

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

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Dwg 3 of 20

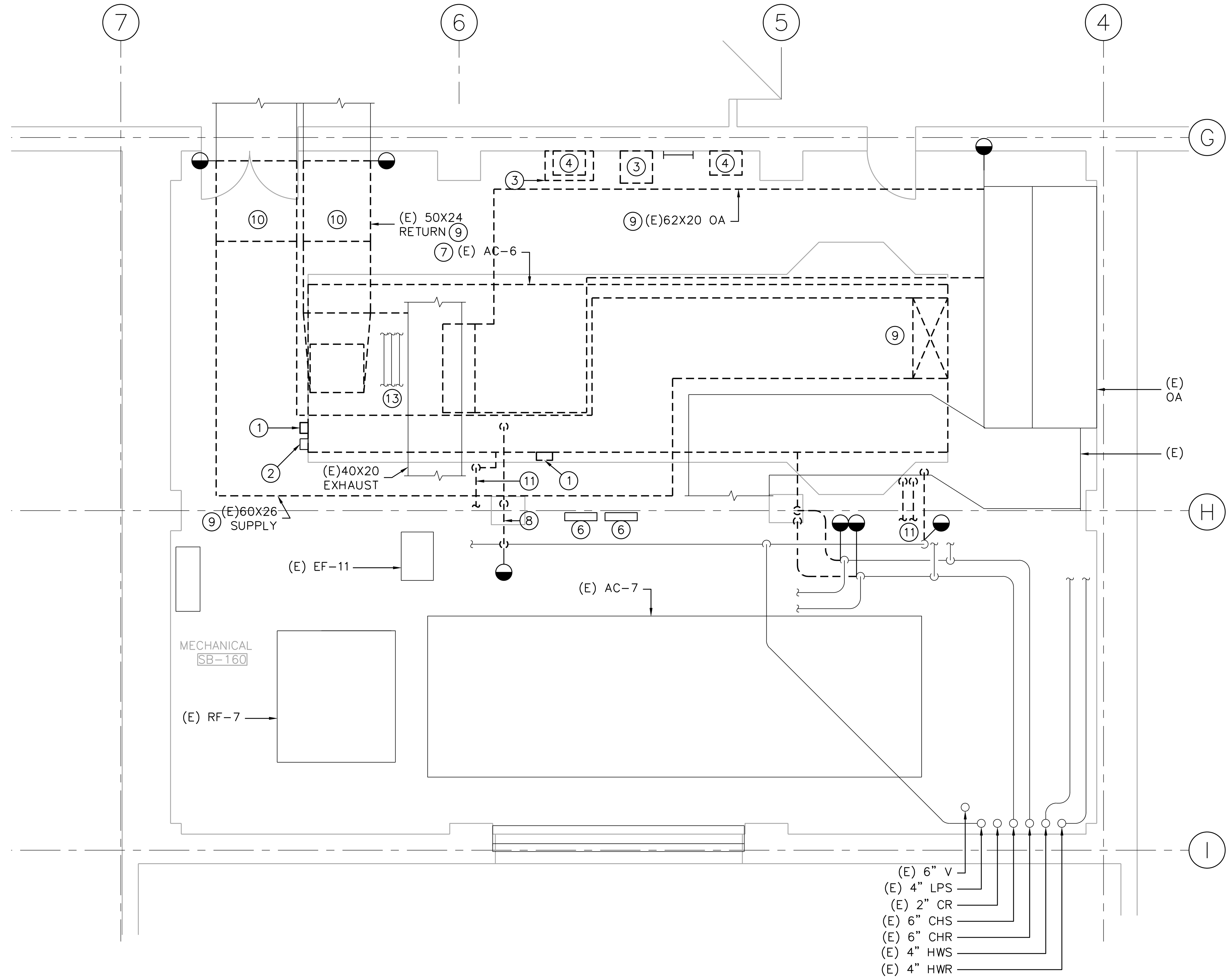
Department of Veterans Affairs

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

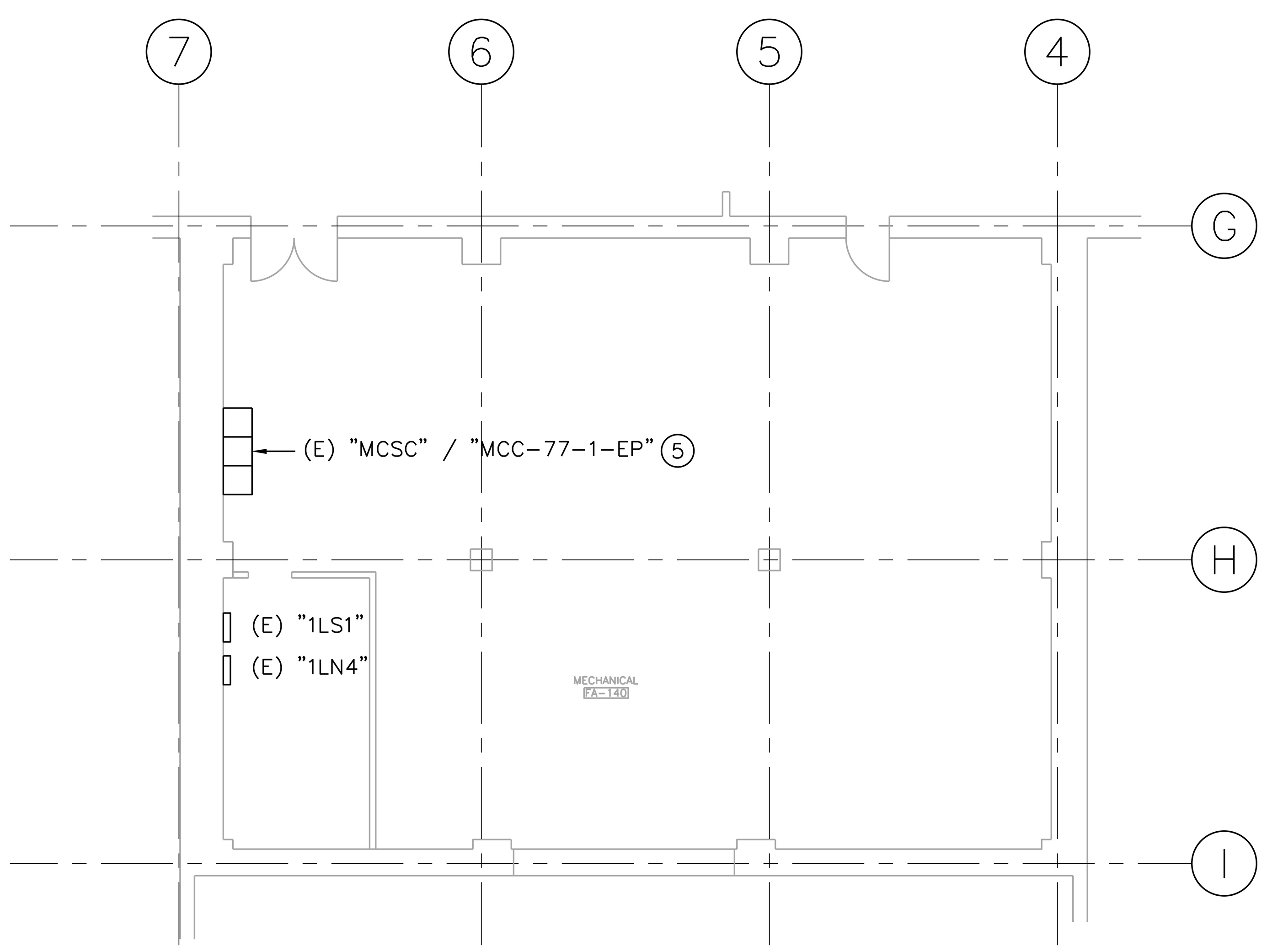
SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"



MECHANICAL ROOM SB-160 DEMOLITION

1/4" = 1-'0"



MECHANICAL ROOM FA-140-DEMOLITION

1/8" = 1-'0"

NUMBERED NOTES ⓧ

1. DEMOLISH (E) DISCONNECT. DEMOLISH (E) WIRE AND CONDUIT BACK TO (E) VFD. DEMOLISH (E) WIRE AND CONDUIT BACK TO (E) MCC "MCSC".

2. RELOCATE (E) DISCONNECT ADJACENT TO (E) EF-11. EXTEND (E) WIRE AND CONDUIT TO RELOCATED DISCONNECT.

3. DEMOLISH (E) VFD. DEMOLISH (E) WIRE AND CONDUIT BACK TO (E) ISOLATION TRANSFORMER.

4. DEMOLISH (E) ISOLATION TRANSFORMER. DEMOLISH (E) WIRE AND CONDUIT BACK TO (E) MCC "MCSC".

5. DEMOLISH (E) STARTERS, BREAKERS, ETC IN COMPARTMENTS 1 AND 2.

6. DEMOLISH (E) PNEUMATIC CONTROL PANEL INCLUDING SUPPORTS. DEMOLISH (E) PENUMATIC TUBING BACK TO ALL CONTROL DEVICES. DEMOLISH (E) AIR CONNECTION BACK TO CONTROL AIR COMPRESSOR AND CAP.

7. DEMOLISH (E) AIR HANDLER UNIT INCLUDING CASING, DAMPERS, COILS, FILTERS, CONTROL ACTUATORS, ETC.

8. DEMOLISH (E) PIPING TO POINT SHOWN INCLUDING VALVES, HANGERS, FITTINGS, INSULATION..

9. DEMOLISH (E) DUCTWORK TO POINT SHOWN INCLUDING HANGERS, DAMPERS, INSULATION, ETC.

10. DEMOLISH (E) SOUND ATTENUATOR.

11. DEMOLISH (E) CR PIPING BACK TO MAIN AND CAP INCLUDING HANGERS, VALVES, INSULATION, ETC.

12. CONNECT TEMPORARY 36" DIAMETER DUCTING AT THIS POINT. ROUTE DUCTING UP THROUGH NEW RELIEF DUCT ROOF PENETRATION AND CONNECT TO TEMPORARY AIR HANDLER. SEE SHEET 77-MD4 AND 77-MH4 FOR LOCATION OF TEMPORARY AIR HANDLER RTU-1.

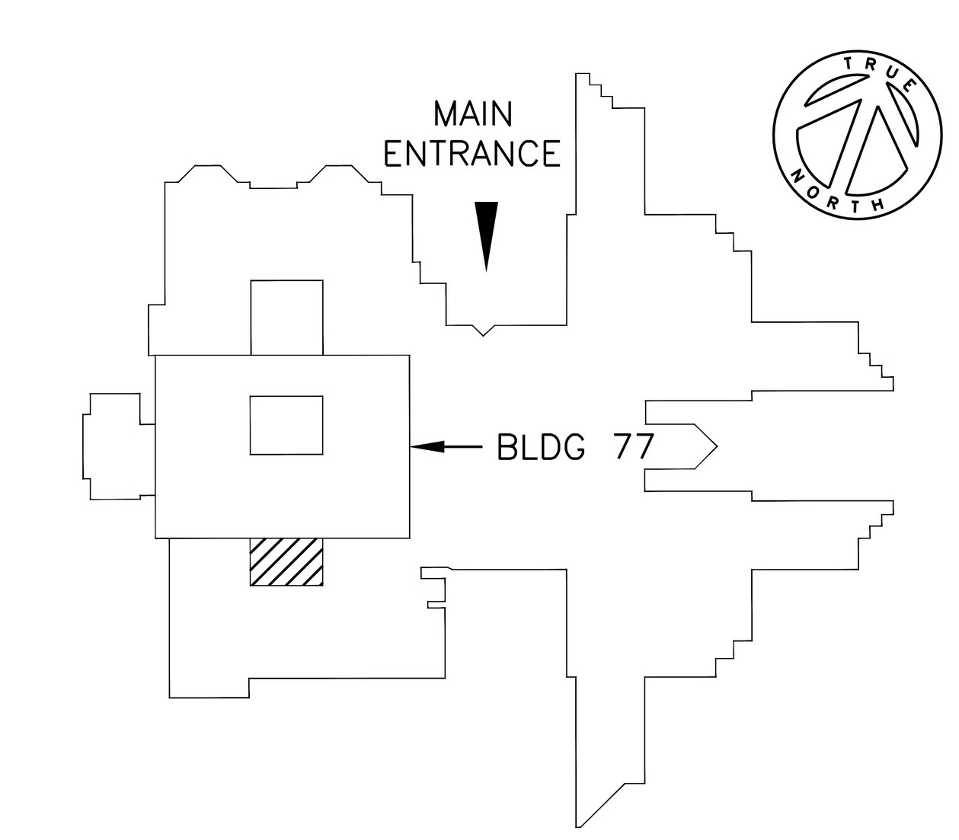
13. RELOCATE (E) $\frac{3}{4}$" CONDUITS AS REQUIRED FOR INSTALLATION OF NEW RELIEF DUCT RISER.

GENERAL NOTES

1. NOT ALL EXISTING UTILITIES LOCATED IN THE CEILING SPACE ARE SHOWN ON THE PLANS. UTILITIES NOT SHOWN INCLUDE BUT ARE NOT LIMITED TO POWER AND COMMUNICATIONS WIRING, AND CONDUIT, CABLE TRAYS, MEDICAL GAS, PLUMBING SERVICES, ETC. A CERTAIN QUANTITY OF THE EXISTING UTILITIES WILL HAVE TO BE RELOCATED AND/OR DEMOLISHED IN ORDER TO INSTALL THE NEW WORK. THE CONTRACTOR SHALL SURVEY THE SITE PRIOR TO BID AND INCLUDE IN HIS PROPOSAL A NECESSARY SUM AS REQUIRED FOR THE RELOCATION AND OR DEMOLITION OF EXISTING UTILITIES. ANY EXISTING UTILITIES WHICH ARE NO LONGER IN SERVICE (AS APPROVED BY THE VA) SHALL BE COMPLETELY DEMOLISHED IN THE AREA OF WORK.
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. ALL WORK ON THIS SHEET IS PHASE 1.



KEY PLAN

NOT TO SCALE

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER · PAUL MCDONALD · No. 15043 · MECHANICAL · STATE OF CALIFORNIA

Approved : Project Engineer
Approved : Associate Director
Approved : Supervisory Engineer
Approved : Director
Approved : VP FMS
Approved :

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Drawing Title: DEMOLITION- MECHANICAL ROOM SB-160, FA-140

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Building Number: 77

Checked: PM

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

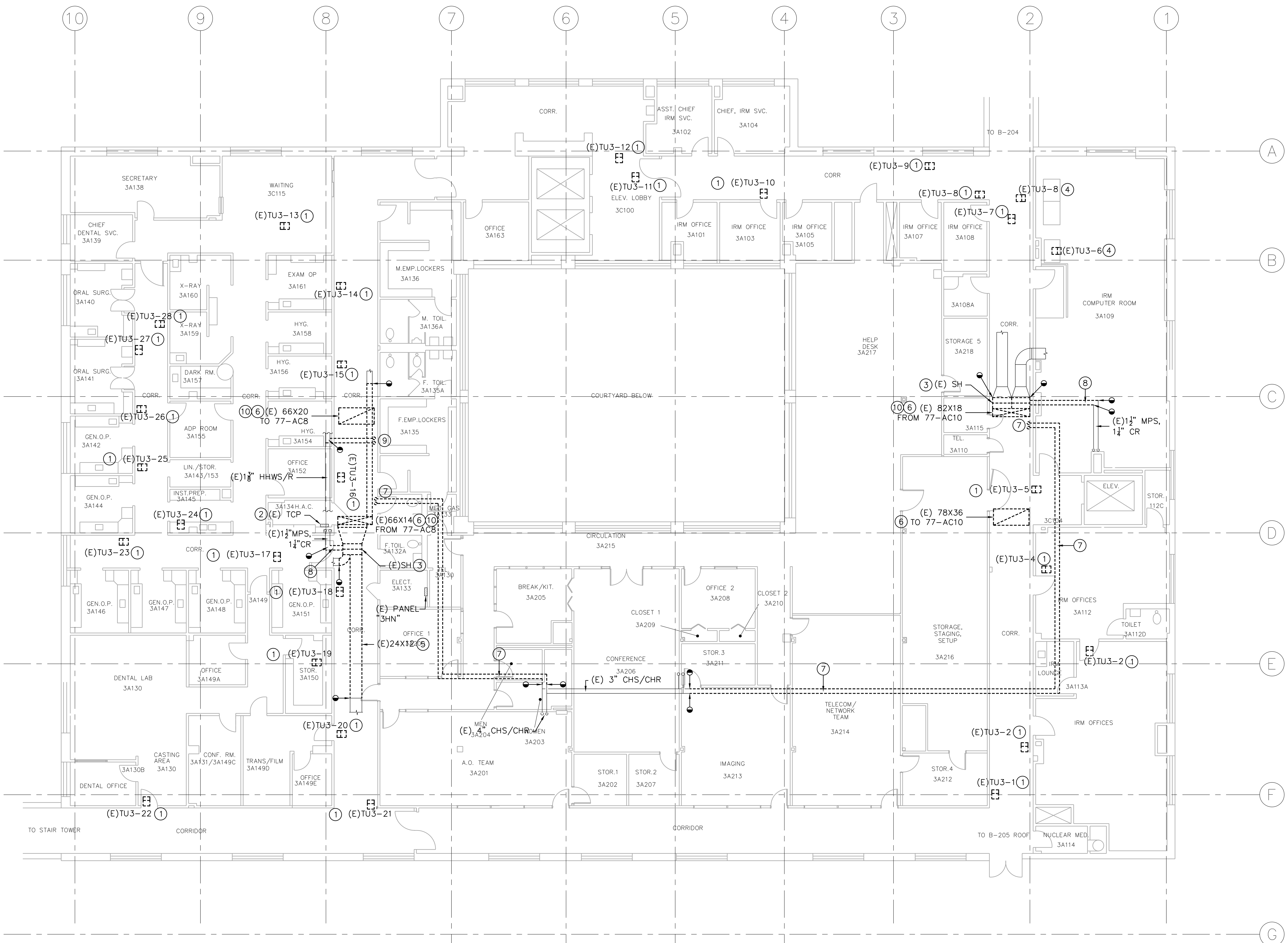
Drawing No. 77-D2

Department of Veterans Affairs

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"



THIRD FLOOR PLAN
1/8" = 1'0"

TRUE NORTH

SCALE: 1/8"=1'-0"

NUMBERED NOTES (X)

[1] 1. DEMOLISH (E) TU TERMINAL UNIT. DEMOLISH SECTION OF (E) INLET AND OUTLET DUCTWORK AS REQUIRED FOR INSTALLATION OF NEW UNIT. DEMOLISH (E) VALVES, SENSORS, ETC. CAP (E) HHW PIPING TEMPORARILY. DEMOLISH (E) THERMOSTAT. DEMOLISH (E) PNEUMATIC TUBING FROM THERMOSTAT TO UNIT, AND FROM UNIT TO TCP.

2. DEMOLISH (E) PNEUMATIC TCP. DEMOLISH (E) PNEUMATIC TUBING FROM PANEL BACK TO COMPRESSOR. FILL-IN, TAPE, AND PAINT (E) RECESS.

3. DEMOLISH (E) STEAM HUMIDIFIER INCLUDING STEAM DISPERSION TUBE, VALVES, ETC. DEMOLISH PNEUMATIC TUBING BACK TO TCP.

[1] 4. DEMOLISH (E) TERMINAL UNIT. DEMOLISH (E) INLET DUCTWORK BACK TO MAIN AND CAP. DEMOLISH (E) VALVES, SENSORS, ETC. DEMOLISH (E) HHW PIPING BACK TO MAIN AND CAP. DEMOLISH (E) THERMOSTAT. DEMOLISH (E) PNEUMATIC TUBING FROM THERMOSTAT TO UNIT, AND FROM UNIT TO TCP.

[3] 5. DEMOLISH (E) INTERNALLY INSULATED DUCT MAIN. VERIFY AND RECORD DUCT SIZES PRIOR TO DEMOLITION.

6. DEMOLISH (E) FIRE/SMOKE DAMPER. DEMOLISH (E) DUCT SMOKE DETECTOR. DEMOLISH (E) FIRE ALARM WIRING BACK TO SOURCE PANEL.

7. DEMOLISH (E) 2" CHS / CHR FROM ROOFTOP UNIT BACK TO POINT SHOWN INCLUDING VALVES, HANGERS, INSULATION, ETC.

8. DEMOLISH (E) 1 1/2" MPS AND 1 1/4" CR INCLUDING HANGERS, VALVES, INSULATION, ETC..

9. DEMOLISH (E) 1 3/8" HHWS / HHWR PIPING FROM MAIN UP TO ROOFTOP UNIT INCLUDING VALVES, INSULATION, ETC.

10. DEMOLISH (E) DUCT RISER. SIZES INDICATED ARE APPROXIMATE. VERIFY SIZE IN FIELD PRIOR TO DEMOLITION.

GENERAL NOTES

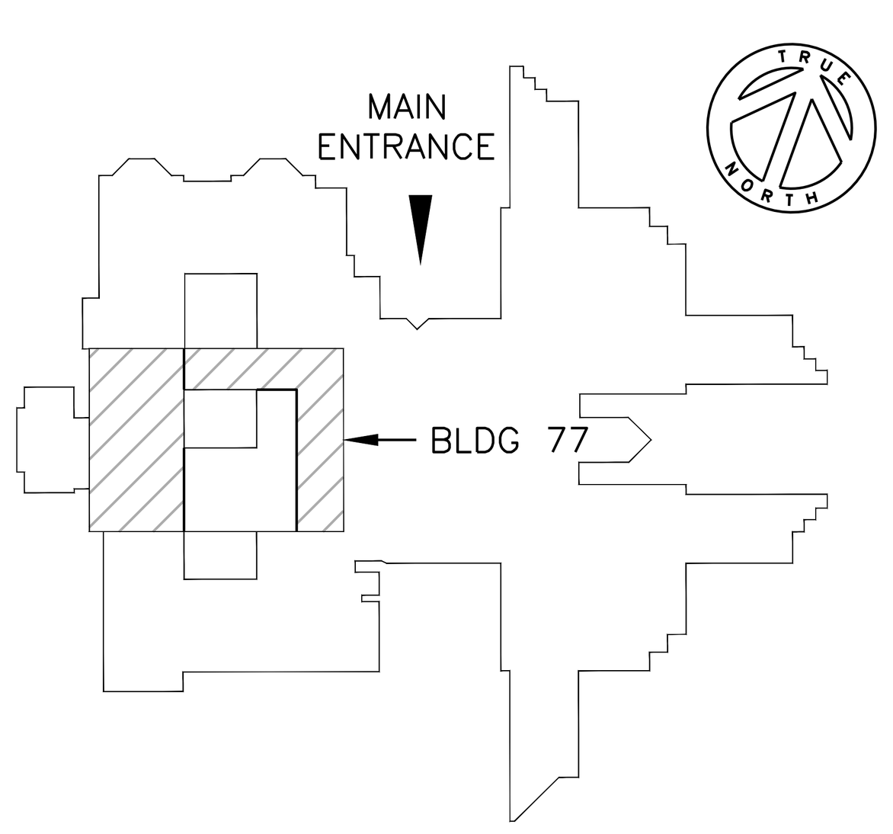
1. NOT ALL EXISTING UTILITIES LOCATED IN THE CEILING SPACE ARE SHOWN ON THE PLANS. UTILITIES NOT SHOWN INCLUDE BUT ARE NOT LIMITED TO POWER AND COMMUNICATIONS WIRING, AND CONDUIT, CABLE TRAYS, MEDICAL GAS, PLUMBING SERVICES, ETC. A CERTAIN QUANTITY OF THE EXISTING UTILITIES WILL HAVE TO BE RELOCATED AND/OR DEMOLISHED IN ORDER TO INSTALL THE NEW WORK. THE CONTRACTOR SHALL SURVEY THE SITE PRIOR TO BID AND INCLUDE IN HIS PROPOSAL A NECESSARY SUM AS REQUIRED FOR THE RELOCATION AND OR DEMOLITION OF EXISTING UTILITIES. ANY EXISTING UTILITIES WHICH ARE NO LONGER IN SERVICE (AS APPROVED BY THE VA) SHALL BE COMPLETELY DEMOLISHED IN THE AREA OF WORK.
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. WORK INVOLVING TERMINAL UNITS FOR 77-AC8 IS PHASE 5. WORK INVOLVING TERMINAL UNITS FOR 77-AC10 IS PHASE 6. WORK INVOLVING 77-AC8 IS PHASE 2. WORK INVOLVING 77-AC-10 IS PHASE 3. PROVIDE TEMPORARY COOLING / HEATING AS PER PHASING NOTES ON SHEET GI2.

SYMBOLS

[X] DEDUCTIVE BID ITEM INDICATOR



KEY PLAN
NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER PAUL MCDONALD No. 15043 MECHANICAL STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: DEMOLITION - 3RD FLOOR

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Building Number: 77

Checked: PM

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Drawing No. 77-D3

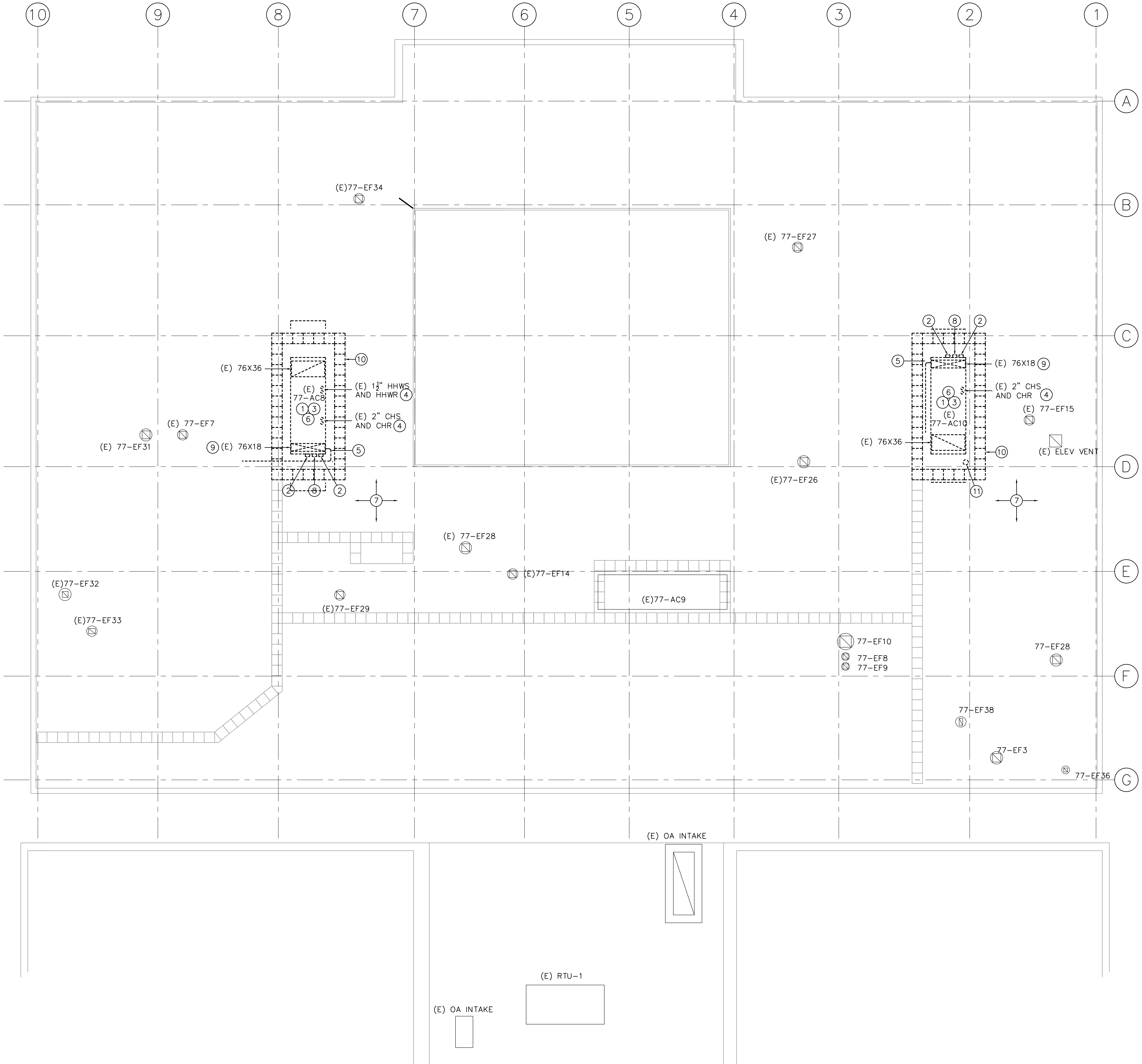
Department of Veterans Affairs

SCALE: 3/4"=1'-0" 0 2 4 8 12

SCALE: 1/2"=1'-0" 0 2 4 8 12

SCALE: 1/4"=1'-0" 0 2 4 8 12

SCALE: 1/8"=1'-0" 0 2 4 8 12



ROOF PLAN
1/8" = 1'0"

NUMBERED NOTES ⓧ

1. DEMOLISH (E) AIR HANDLER UNIT. DEMOLISH (E) INSULATED CURB. DISCONNECT (E) DUCTWORK. DEMOLISH (E) DUCT TRANSITIONS.

2. DEMOLISH (E) DISCONNECT. DEMOLISH (E) POWER WIRING AND CONDUIT BACK TO SOURCE PANEL.

3. DEMOLISH (E) PNEUMATIC ACTUATORS AND SENSORS. DEMOLISH (E) PNEUMATIC TUBING BACK TO SOURCE PANEL.

4. DEMOLISH (E) VALVES AND FITTINGS. DEMOLISH (E) PIPING DOWN TO CEILING SPACE.

5. DEMOLISH (E) CONDENSATE DRAIN LINE FROM UNIT TO ROOF DRAIN.

6. DISCONNECT (E) LIGHTNING PROTECTION CABLES AND RODS AND RESERVE.

7. (E) ROOF. PROTECT ROOF FROM DAMAGE DURING CONSTRUCTION.

8. DEMOLISH (E) J-BOX. DEMOLISH (E) WIRE AND CONDUIT BACK TO PANEL "3HN" IN ROOM 3A133. DEMOLISH (E) BREAKER AT PANEL.

9. DEMOLISH (E) DUCT RISER. VERIFY RISER DIMENSIONS IN FIELD.

10. REMOVE (E) CONCRETE PAVERS AND STORE.

11. RELOCATE (E) ROOF DRAIN.

12. DEMOLISH (E) ROOFING INCLUDING MEMBRANE, INSULATION, ETC. DEMOLISH (E) STEEL DECKING UNDER FOOTPRINT OF NEW UNIT.

GENERAL NOTES

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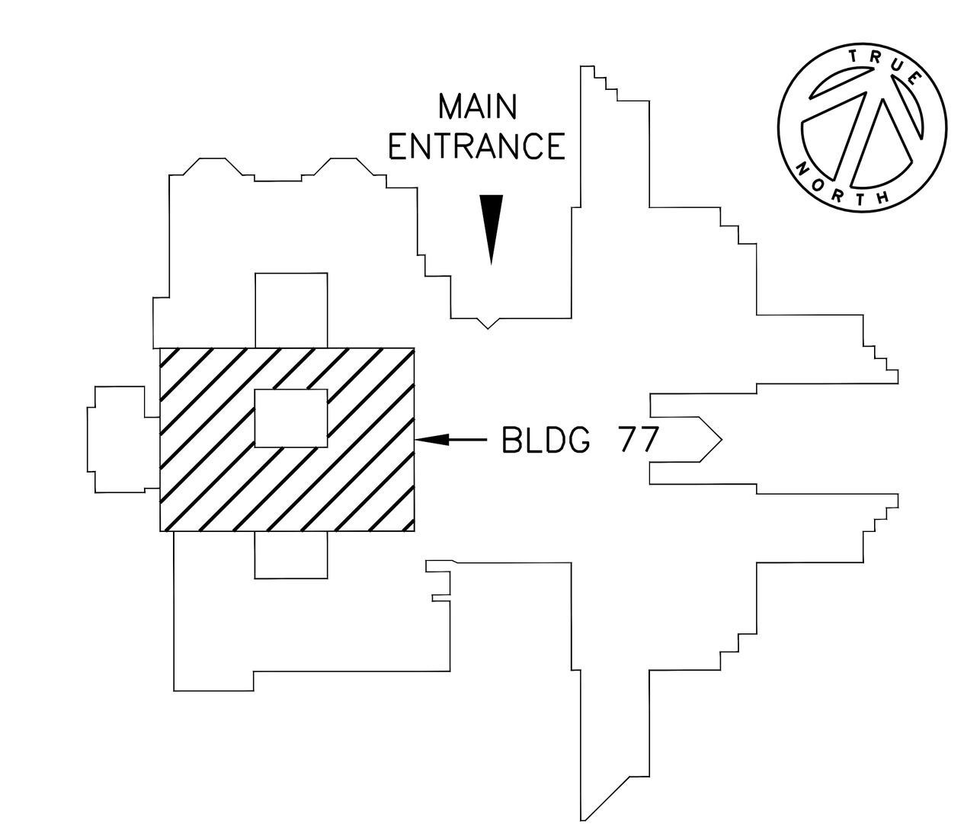
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."
4. SEE SHEET 77-HA1 FOR HAZARDOUS MATERIALS REMOVAL.

PHASING

1. WORK INVOLVING 77-AC8 IS PHASE 2. WORK INVOLVING 77-AC-10 IS PHASE 3. PROVIDE TEMPORARY COOLING / HEATING AS PER PHASING NOTES ON SHEET GI2.



KEY PLAN
NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER PAUL MCDONALD No. 15049 MECHANICAL STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

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Drawing Title: DEMOLITION - ROOF

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Building Number: 77

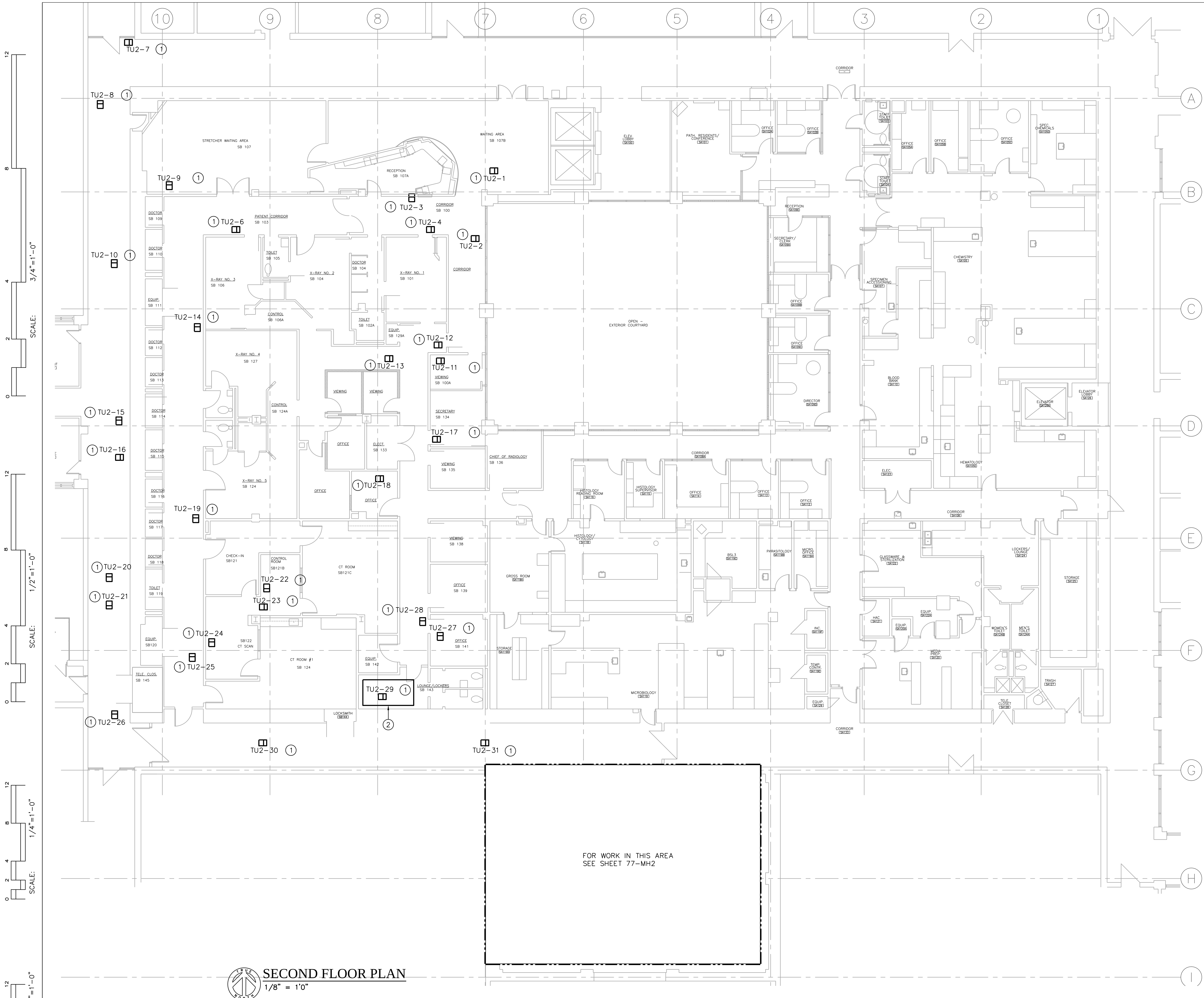
Drawing No. 77-D4

Checked: PM

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Dwg 6 of 20

Department of Veterans Affairs



SECOND FLOOR PLAN
1/8" = 1'0"

NUMBERED NOTES (X)

[1] 1. INSTALL NEW TU TERMINAL UNIT. INSTALL NEW VALVE PACKAGE AND RECONNECT TO (E) HHW PIPING. INSTALL INLET AND OUTLET DUCT TRANSITIONS AND RECONNECT TO (E) DUCTWORK. INSTALL DDC CONTROLS, CONTROL WIRING, AND POWER WIRING. INSTALL THERMOSTAT IN LOCATION OF DEMOLISHED THERMOSTAT. PATCH AND PAINT WALL AS REQUIRED AT THERMOSTAT LOCATION. SEE DETAIL 6 ON SHEET 77-MH7 AND DETAIL 2 ON SHEET 77-MH7. TYP.

2. RECONSTRUCT AND/OR PATCH, TAPE, AND PAINT (E) GYPSUM BOARD CEILING AFTER INSTALLATION OF NEW EQUIPMENT IS COMPLETE. REINSTALL (E) ACCESS DOORS AT LOCATIONS THAT PERMIT SERVICING OF TERMINAL UNIT CONTROLLER AND VALVES.

GENERAL NOTES

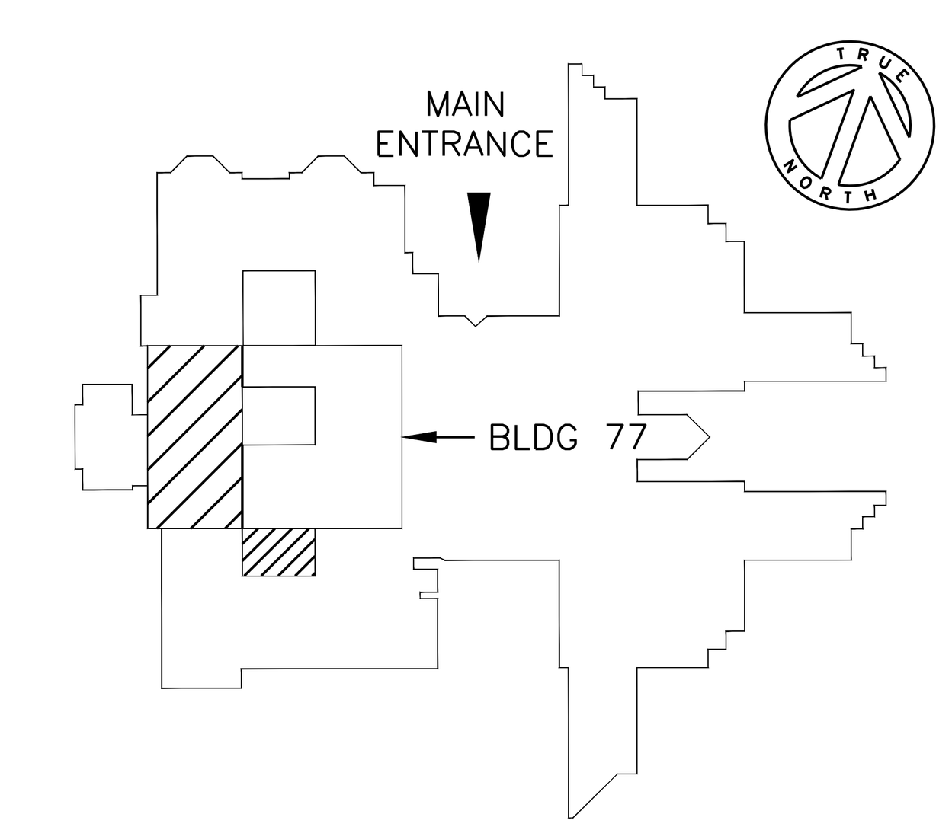
1. NOT ALL EXISTING UTILITIES LOCATED IN THE CEILING SPACE ARE SHOWN ON THE PLANS. UTILITIES NOT SHOWN INCLUDE BUT ARE NOT LIMITED TO POWER AND COMMUNICATIONS WIRING, AND CONDUIT, CABLE TRAYS, MEDICAL GAS, PLUMBING SERVICES, ETC. A CERTAIN QUANTITY OF THE EXISTING UTILITIES WILL HAVE TO BE RELOCATED AND/OR DEMOLISHED IN ORDER TO INSTALL THE NEW WORK. THE CONTRACTOR SHALL SURVEY THE SITE PRIOR TO BID AND INCLUDE IN HIS PROPOSAL A NECESSARY SUM AS REQUIRED FOR THE RELOCATION AND OR DEMOLITION OF EXISTING UTILITIES. ANY EXISTING UTILITIES WHICH ARE NO LONGER IN SERVICE (AS APPROVED BY THE VA) SHALL BE COMPLETELY DEMOLISHED IN THE AREA OF WORK.
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. ALL WORK ON THIS SHEET IS PHASE 4.

SYMBOLS

[X] DEDUCTIVE BID ITEM INDICATOR



KEY PLAN
NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER · PAUL MCDONALD · No. 15063 · MECHANICAL · STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: HVAC - 2ND FLOOR

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621-11-127
Drawn: BMA
Checked: PM
Building Number: 77
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN
Drawing No. 77-MH1
Dwg 7 of 20

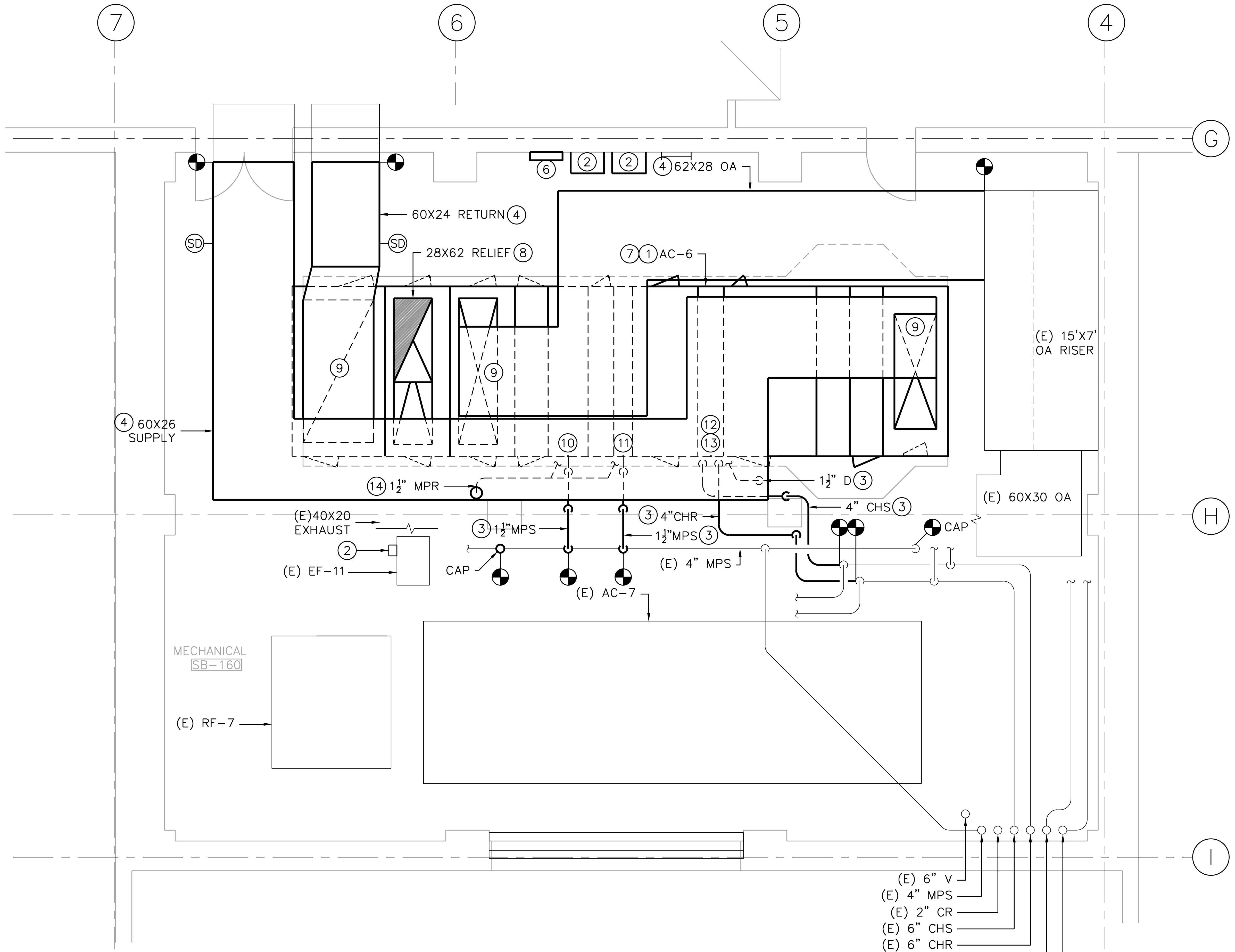
Department of Veterans Affairs

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"



MECHANICAL ROOM SB-160
1/4" = 1-'0"

NUMBERED NOTES (X)

1. INSTALL AIR HANDLER UNIT ON (E) HOUSEKEEPING PAD. SECURE UNIT TO SLAB WITH 3"X3"X¼" CLIPS AND ½" ANCHORS, MIN TWO ANCHORS PER SECTION (ONE EACH SIDE.)
2. INSTALL VFD.
3. INSTALL PIPING TO POINT SHOWN INCLUDING VALVES, HANGERS, FITTINGS, INSULATION.
4. INSTALL DUCTWORK TO POINT SHOWN INCLUDING HANGERS, DAMPERS, INSULATION, ETC.
5. RELOCATE (E) DISCONNECT ADJACENT TO (E) EF-11. EXTEND (E) WIRE AND CONDUIT TO RELOCATED DISCONNECT.
6. DDC CONTROL PANEL. CONNECT CONTROLLER TO (E) VA LAN IN ADJACENT IT ROOM VIA CAT-6E CABLE. CONNECT CONTROLLER TO TERMINAL UNIT CONTROLLERS VIA MS/TP CABLING.
7. PROVIDE ACCESS DOORS ON BOTH SIDES OF EACH SECTION AS ALLOWED BY MANUFACTURER.
8. RELIEF DUCT UP THROUGH ROOF TO RELIEF HOOD. OFFSET RELIEF DUCT AS REQUIRED TO PENETRATE ROOF AND AVOID (E) STRUCTURAL MEMBERS.
9. TRANSITION FROM DUCT TO AIR HANDLER OPENING.
10. STEAM IFB COIL. SEE DETAIL 11 ON SHEET 77-MH6.
11. STEAM HUMIDIFIER. SEE DETAIL 5 ON SHEET 77-MH6.
12. CHILLED WATER COIL. SEE DETAIL 9 ON SHEET 77-MH6.
13. COOLING COIL CONDENSATE DRAIN. ROUTE TO DRAIN MIN ⅛" PER FOOT IN DIRECTION OF FLOW. SEE DETAIL 10 ON SHEET 77-MH6.
14. ROUTE MPR THROUGH (E) 4" PENETRATION DOWN INTO 1ST FLOOR MECHANICAL ROOM AND POC TO (E) 2" LPR.

GENERAL NOTES

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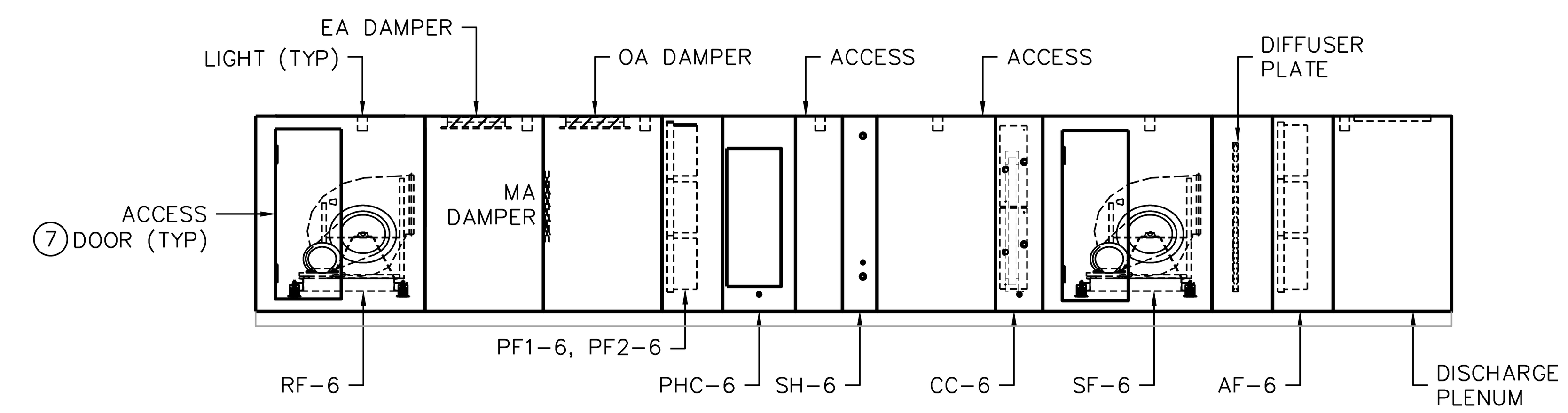
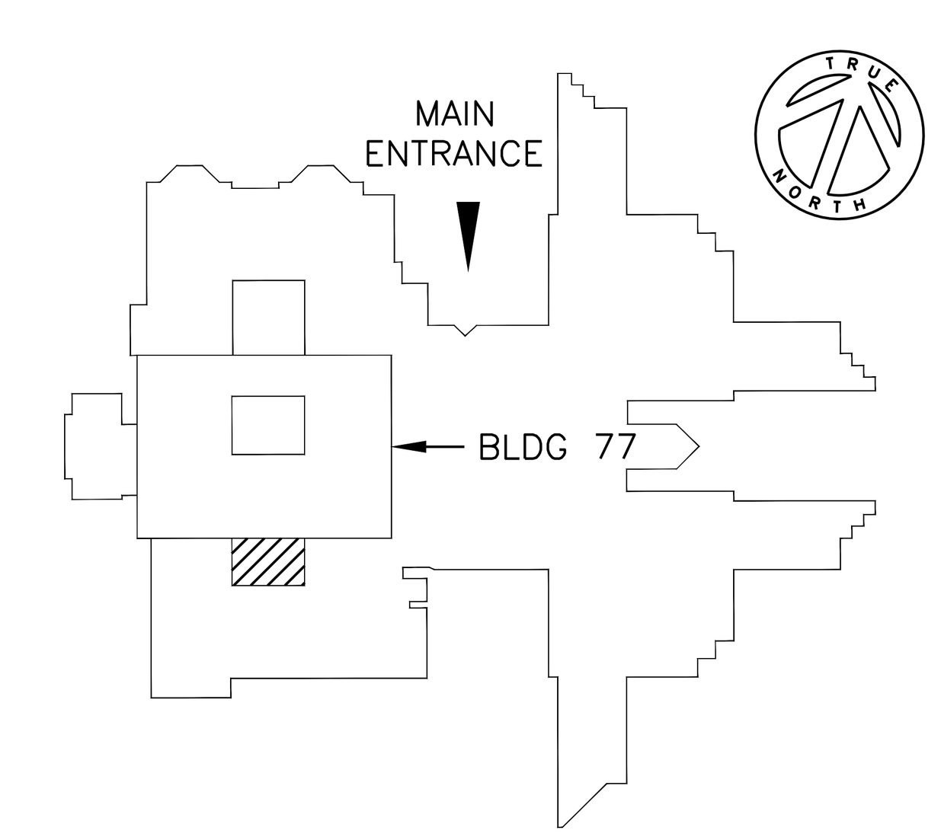
2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. ALL WORK ON THIS SHEET IS PHASE 1.



AIR HANDLER 77-AC6 ELEVATION (A)
1/4" = 1-'0"   77-MH2



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REGISTERED PROFESSIONAL ENGINEER PAUL McDONALD No. 15043 MECHANICAL STATE OF CALIFORNIA

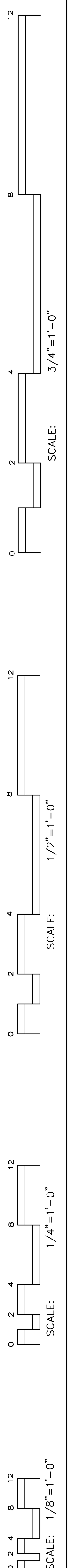
Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

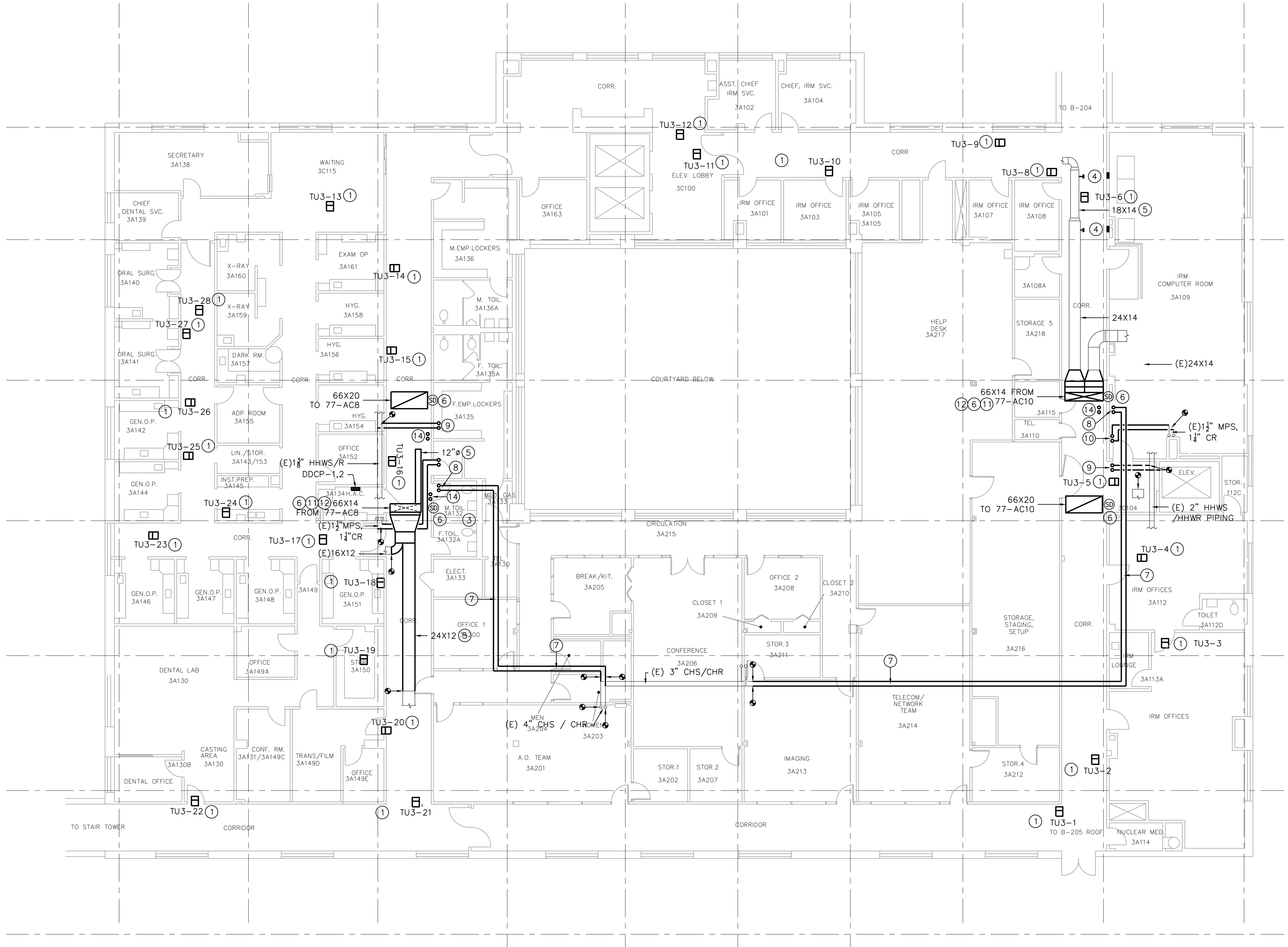
Drawing Title: MECHANICAL ROOM SB-160

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621-11-127
Drawn: BMA
Building Number: 77
Checked: PM
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN
Drawing No. 77-MH2
Dwg 8 of 20

Department of Veterans Affairs





THIRD FLOOR PLAN

1/8" = 1'0"

NUMBERED NOTES (X)

[2] 1. INSTALL NEW TU TERMINAL UNIT. INSTALL NEW VALVE PACKAGE AND RECONNECT TO (E) HHW PIPING. INSTALL INLET AND OUTLET DUCT TRANSITIONS AND RECONNECT TO (E) DUCTWORK. INSTALL DDC CONTROLS, CONTROL WIRING, AND POWER WIRING. SEE DETAIL 5 ON SHEET 77-MH7. TYP. INSTALL THERMOSTAT IN SAME LOCATION AS DEMOLISHED UNIT. PATCH AND PAINT WALL AS REQUIRED AT THERMOSTAT LOCATIONS.

2. INSTALL DDC CONTROL PANELS FOR 77-AC8 AND 77-AC9.

3. PATCH, TAPE, AND PAINT (E) HARD CEILING..

4. CAP (E) DUCT MAIN AT LOCATION OF REMOVED TERMINAL UNIT. FILL-IN AND SEAL (E) WALL PENETRATION.

[3] 5. INSTALL DUCT MAINS INCLUDING INSULATION, HANGERS, DAMPERS. DUCT MAINS TO MATCH (E) DEMOLISHED SIZES.

6. DUCT SMOKE DETECTOR. WIRE TO (E) ALARM PANEL AND AIR HANDLER SAFETY SHUTDOWN CIRCUIT.

7. 2½" CHS / CHR PIPING INCLUDING INSULATION, HANGERS, ETC.

8. 2½" CHS / CHR PIPING, EXTEND PIPING TO NEW PENETRATION POINT, AND PENETRATE THE ROOF TO NEW AIR HANDLING UNIT PIPE CABINET.

9. 1¼" HWWS / HHWR PIPING. CONNECT TO (E) MAIN, EXTEND PIPING TO NEW PENETRATION POINT, AND PENETRATE ROOF UP TO NEW AIR HANDLING UNIT PIPE CABINET.

10. 1½" MPS, 1¼" CR. CONNECT TO (E) MAIN, EXTEND PIPING TO NEW PENETRATION POINT, AND PENETRATE ROOF UP TO AIR HANDLER PIPING CABINET.

11. PATCH AND SEAL DUCT MAIN AT POINT OF (E) HUMIDIFIER DEMOLITION.

12. DUCT RISER TO/FROM UNIT. TRANSITION TO DUCT MAIN.

13. DRIP LEG AT BOTTOM OF MPS RISER. SEE DETAIL 3 ON SHEET 77-MH6.

14. PATCH AND SEAL ABANDONED PIPE PENETRATION.

GENERAL NOTES

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2. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.

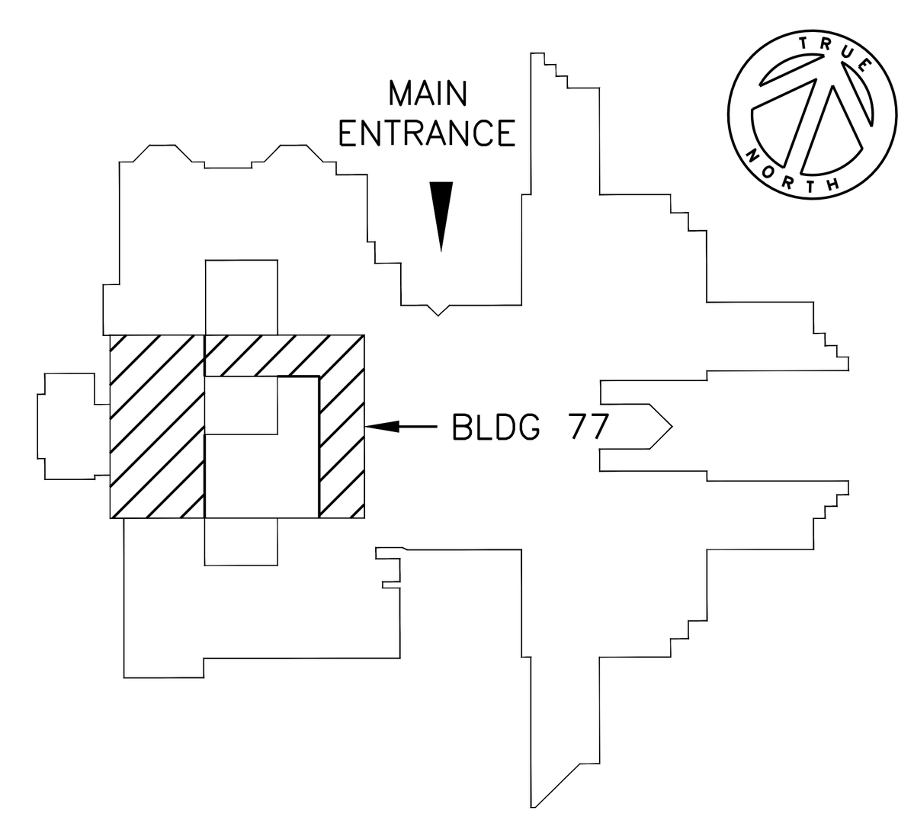
3. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."

PHASING

1. WORK INVOLVING TERMINAL UNITS FOR 77-AC8 IS PHASE 5. WORK INVOLVING TERMINAL UNITS FOR 77-AC10 IS PHASE 6. WORK INVOLVING 77-AC8 IS PHASE 2. WORK INVOLVING 77-AC-10 IS PHASE 3. PROVIDE TEMPORARY COOLING / HEATING AS PER PHASING NOTES ON SHEET GI2.

SYMBOLS

[X] DEDUCTIVE BID ITEM INDICATOR



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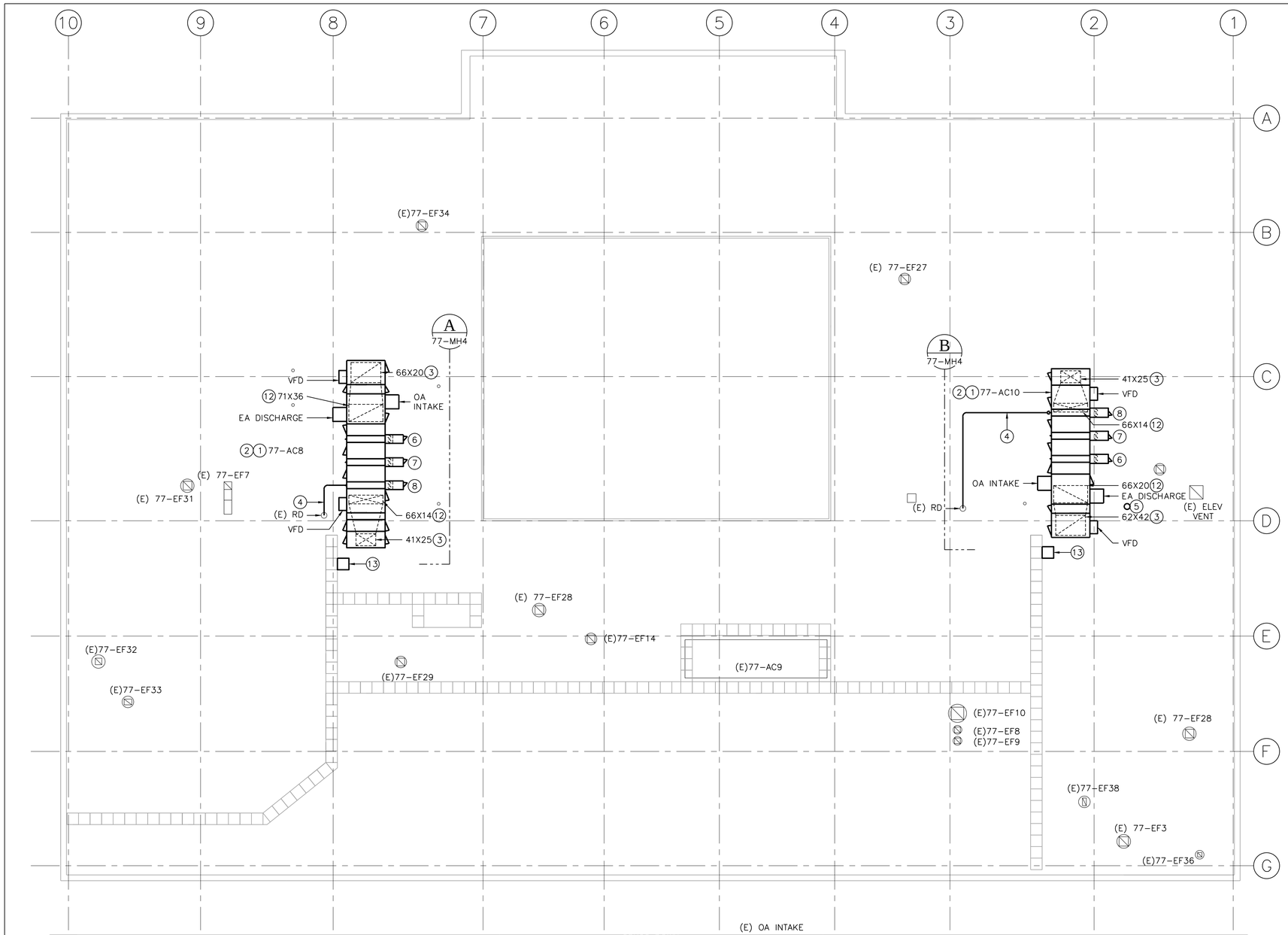
REGISTERED PROFESSIONAL ENGINEER PAUL McDONALD No. 15093 MECHANICAL STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title:	HVAC - 3RD FLOOR
Project Title:	REPLACE AIR HANDLER UNITS BUILDING 77
Date:	4/24/12
Project No.:	621-11-127
Drawn:	BMA
Building Number:	77
Checked:	PM
Location:	JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN
Drawing No.	77-MH3
	Dwg 9 of 20

Department of Veterans Affairs



ROOF PLAN
1/8" = 1'0"

GENERAL NOTES

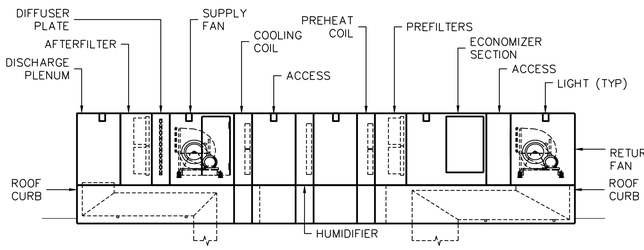
1. SEE SHEETS GI-2 FOR ADDITIONAL WORK REQUIRED BY CONSTRUCTION PHASING.
2. PROVIDE INFECTION CONTROL MEASURES DURING ALL WORK IN THIS AREA. SEE SHEET GI2 "CONSTRUCTION DIRECTIVES."
3. SEE SHEET 77-HA1 FOR HAZARDOUS MATERIALS REMOVAL.

PHASING

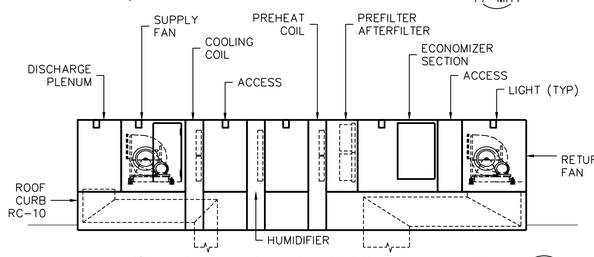
1. WORK INVOLVING 77-AC8 IS PHASE 2. WORK INVOLVING 77-AC-10 IS PHASE 3. PROVIDE TEMPORARY COOLING / HEATING AS PER PHASING NOTES ON SHEET GI2.

NUMBERED NOTES (x)

1. INSTALL AIR HANDLER UNIT INCLUDING POWER WIRING, ELECTRICAL, ETC.
2. INSTALL 30" HIGH INSULATED ROOF CURB. SEE SHEET 77-SS1 FOR STRUCTURAL REINFORCEMENT. PIPE CABINETS SHALL INCLUDE ROOF CURBS. FLASH AND SEAL ROOF CURB INCLUDING PIPING CABINETS. SEE DETAIL 14 ON SHEET 77-MH6..
3. INSTALL INSULATED DUCT TRANSITION FROM AIR HANDLER FACTORY OPENING TO DUCT RISER. TRANSITION ELBOWS SHALL INCORPORATE DOUBLE-THICKNESS ACOUSTICAL TURNING VANES. PROVIDE AND INSTALL DUCT SUPPORTS INDEPENDENT OF UNIT.
4. 1 1/2" CONDENSATE DRAIN FROM AIR HANDLER TO NEAREST ROOF DRAIN. THE DRAIN SHALL HAVE A MINIMUM SLOPE OF 1/8" PER FOOT IN THE DIRECTION OF FLOW. SEE DETAIL 10 ON SHEET 77-MH6.
5. RELOCATED (E) ROOF DRAIN. EXTEND (E) DRAIN LEADER AND RECONNECT. FLASH AND SEAL.
6. REHEAT COIL. AIR HANDLER PIPING CABINET DIMENSION SHALL BE SIZED TO ACCOMMODATE THE REHEAT COIL PIPING, PUMP, VALVES, ELECTRICAL, ETC. SEE DETAIL 8 ON SHEET 77-MH6.
7. STEAM HUMIDIFIER. AIR HANDLER PIPING CABINET DIMENSION SHALL BE SIZED TO ACCOMMODATE THE HUMIDIFIER COIL PIPING, VALVES, ETC. SEE DETAIL 5 ON SHEET 77-MH6.
8. CHILLED WATER COIL. AIR HANDLER PIPING CABINET DIMENSION SHALL BE SIZED TO ACCOMMODATE THE CHILLED WATER COIL PIPING, VALVES, ETC. SEE DETAIL 9 ON SHEET 77-MH6.
9. RELIEF HOOD ON 18" HIGH CURB. FLASH AND SEAL CURB INTO (E) ROOF. OPENING SHALL BE USED FOR TEMPORARY AIR DUCTING FOR THE 77-AC6 REPLACEMENT. WHEN THE TEMPORARY AIR IS NO LONGER REQUIRED SECURE RELIEF HOOD TO CURB.
10. (E) RTU-1. THIS UNIT MAY BE USED AS A SOURCE OF TEMPORARY AIR DURING THE REPLACEMENT OF 77-AC6. PROVIDED 460V, 82 MCA TEMPORARY POWER CABLING TO UNIT AND A PROPERLY SIZED SOURCE BREAKER, 100A MOP. COORDINATE WITH FACILITY FOR POWER SOURCE LOCATION.
11. PIPING CABINETS, HOODS, ENCLOSURES, VFDS NOT SHOWN. NOT ALL ACCESS DOORS SHOWN IN ELEVATION PROVIDE ACCESS DOORS ON EVERY SECTION.
12. DUCT RISER TO/FROM SPACE. FLASH AND SEAL TO (E) ROOF.
13. REINSTALL PAVERS COMPLETELY AROUND NEW UNIT. PROVIDE ADDITIONAL PAVERS AS REQUIRED. TYP.



11 AIR HANDLER AC-8 ELEVATION (A, 77-MH4)
1/4" = 1'-0"



11 AIR HANDLER AC-10 ELEVATION (B, 77-MH4)
1/4" = 1'-0"

KEY PLAN
NOT TO SCALE

IF THIS SHEET DOES NOT MEASURE 42" x 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

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Drawing Title: HVAC - ROOF

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621-11-127
Drawing No. 77-MH4
Dwg 10 of 20

Drawn:	Building Number:
BMA	77
Checked: PM	Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Department of Veterans Affairs

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"

AIR HANDLING UNIT SCHEDULE

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	AIRFLOW			SUPPLY FAN MARK	EXHAUST FAN MARK	PREFILTER MARK	AFTER FILTER MARK	PREHEAT COIL MARK	COOLING COIL MARK	REHEAT COIL	HUMIDIFIER MARK	WEIGHT (LBS)
				SUPPLY	MIN. O.A.	RETURN									
				CFM	CFM	CFM									
77-AC6	SA-132	RADIOLOGY 2ND FLOOR	–	22192	5530	16662	SF-6	RF-6	PF-6	AF-6A/B	PHC-6	CC-6	---	SH-6	15667
77-AC8	ROOF	DENTAL CLINIC 3RD FLOOR	–	11063	2901	8162	SF-8	RF-8	PF-8	AF-8A/B	PHC-8	CC-8	---	SH-8	9374
77-AC10	ROOF	IRM 3RD FLOOR	–	9915	2349	7566	SF-10	RF-10	PF-10	AF-10	PHC-10	CC-10	---	SH-10	8374

AIR HANDLERS SHALL BE BALANCED TO THE SUM OF THE TERMINAL UNIT SCHEDULED MAXIMUM AIRFLOWS.

FAN SCHEDULE

MARK	LOCATION	SYSTEM AND/OR SERVICE	AIRFLOW	TSP	FAN							MOTOR ELECTRICAL			
					TYPE	WHEEL	CLASS	ARRANGEMENT, ROTATION, AND DISCHARGE	DIAMETER	DRIVE	FAN MAX RPM	NOMINAL POWER		PHASE/ VOLT	RPM
			CFM	IN					IN			BHP	HP		
SF-6	SA-132	77-AC6	22192	8.3	DWDI	AIRFOIL	2	3, CW, THD	28	BELT	1640	39.8	40	3/460	1800
RF-6	SA-132	77-AC6	16662	1.2	DWDI	AIRFOIL	2	3, CW, THD	32	BELT	656	4.9	7.5	3/460	1800
SF-8	ROOF	77-AC8	11063	7.4	DWDI	AIRFOIL	2	3, CW, THD	20	BELT	2296	19.2	20	3/460	1800
RF-8	ROOF	77-AC8	8162	1.2	DWDI	AIRFOIL	2	3, CW, THD	22	BELT	982	2.7	3	3/460	1800
SF-10	ROOF	77-AC10	9915	6.2	DWDI	AIRFOIL	2	3, CW, THD	20	BELT	2086	14.4	15	3/460	1800
RF-10	ROOF	77-AC10	7566	1.3	DWDI	AIRFOIL	2	3, CW, THD	22	BELT	976	2.6	3	3/460	1800

CHILLED WATER COOLING COIL SCHEDULE

MARK	SYSTEM AND/OR SERVICE	AIRFLOW	MAX FACE VELOCITY	APD	EAT		LAT		TOTAL CAPACITY	SENSIBLE CAPACITY	CIRCULATING FLUID				
					Db	Wb	Db	Wb			FLOW	EWT	LWT	WPD	ROWS
		CFM	FPM	IN WG	°F	°F	°F	°F	MBH	MBH	GPM	°F	°F	FT	
CC-6	77-AC6	22192	452	0.8	80.2	66.4	51.7	51.6	980	697	122	45	61	20	8
CC-8	77-AC8	11063	532	1.2	80.2	66.4	51.7	51.6	489	347	61	45	61	19	8
CC-6	77-AC6	9915	476	1.0	80.2	66.4	51.7	51.6	438	311	55	45	61	16	8

HOT WATER PREHEAT COIL SCHEDULE

MARK	SYSTEM AND/OR SERVICE	AIRFLOW	MAX FACE VELOCITY	APD	TEMPERATURES		TOTAL MIN CAPACITY	HOT WATER				
					EAT	LAT		FLOW	EWT	LWT	WPD	ROWS
		CFM	FPM	IN WG	°F	°F	MBH	GPM	°F	°F	FT	
PH-8	77-AC8	11063	651	0.2	25	55	360	16	180	135	7.5	1
PH-10	77-AC10	9915	583	0.1	25	55	322	12	180	126	4.5	1

STEAM PREHEAT COIL SCHEDULE (IFB)

MARK	SYSTEM AND/OR SERVICE	AIRFLOW	MAX FACE VELOCITY	APD	TEMPERATURES		TOTAL MIN CAPACITY	STEAM			
					EAT	LAT		FLOW	PSIG	TRAP	ROWS
		CFM	FPM	IN WG	°F	°F	MBH	LBS/HR			
PH-6	77-AC6	11096	414	0.1	25	53	335	352	25	704	1

STEAM HUMIDIFER SCHEDULE

MARK	SYSTEM AND/OR SEVICE	HUMIDIFIER TYPE	AIRFLOW	NO. OF MANIFOLDS	EA		LA	STEAM	
					Db	%RH	%RH	PRESSURE	FLOW
			CFM		°F			PSIG	LBS/HR
SH-6	77-AC6	DISPERSION TUBE	22192	1	65	26	50	25	337
SH-8	77-AC8	DISPERSION TUBE	11063	1	65	26	50	25	168
SH-10	77-AC10	DISPERSION TUBE	6700	1	65	26	50	25	150

PUMP SCHEDULE

MARK	SYSTEM AND/OR SERVICE	TYPE	CIRCULATING FLUID				ELECTRICAL MOTOR			
			FLUID	FLOW	HEAD	TEMPERATURE	NOMINAL POWER	PHASE	VOLT	MAX RPM
				GPM	FT	°F	HP			
HWP-8	PREHEAT	INLINE	HHW	16	20	180	1/4	1	120	1750
HWP-10	PREHEAT	INLINE	HHW	12	15	180	1/4	1	120	1750

AIR FILTER SCHEDULE

MARK	MERV RATING	AIRFLOW	APD MID-LIFE
		CFM	IN WG
PF-6	8	SEE AHU SCHEDULE	0.627
PF-8	8	SEE AHU SCHEDULE	0.654
PF-10	8	SEE AHU SCHEDULE	0.632
AF-6A	11	SEE AHU SCHEDULE	0.715
AF-6B	14	SEE AHU SCHEDULE	0.847
AF-8A	11	SEE AHU SCHEDULE	0.737
AF-8B	14	SEE AHU SCHEDULE	0.774
AF-10	13	SEE AHU SCHEDULE	0.828

TERMINAL UNIT SCHEDULE

SYSTEM	TAG	INLET (IN)	CFM MAX	CFM MIN	MAX INLET SP (INWG)	GPM
AC-6	TU2-1	10	750	750	0.75	2.0
AC-6	TU2-2	10	900	900	0.75	2.0
AC-6	TU2-3	6	360	360	0.75	1.0
AC-6	TU2-4*	8	580	580	0.75	3.0
AC-6	TU2-5					
AC-6	TU2-6	6	340	340	0.75	1.0
AC-6	TU2-7	8	410	410	0.75	1.5
AC-6	TU2-8	8	405	405	0.75	1.5
AC-6	TU2-9	8	430	430	0.75	1.5
AC-6	TU2-10*	10	800	800	0.75	2.0
AC-6	TU2-11	8	460	460	0.75	1.5
AC-6	TU2-12	12	1000	1000	0.75	3.0
AC-6	TU2-13	10	620	620	0.75	2.0
AC-6	TU2-14	8	550	550	0.75	1.5
AC-6	TU2-15*	10	800	800	0.75	2.0
AC-6	TU2-16	8	490	490	0.75	1.5
AC-6	TU2-17	8	560	560	0.75	1.5
AC-6	TU2-18	8	410	410	0.75	1.5
AC-6	TU2-19	10	790	790	0.75	2.0
AC-6	TU2-20	10	800	800	0.75	2.0
AC-6	TU2-21*	10	800	800	0.75	2.0
AC-6	TU2-22	6	280	280	0.75	1.0
AC-6	TU2-23*	12	980	980	0.75	3.0
AC-6	TU2-24	8	470	470	0.75	1.5
AC-6	TU2-25	8	480	480	0.75	1.5
AC-6	TU2-26	10	705	705	0.75	2.0
AC-6	TU2-27	8	560	560	0.75	1.5
AC-6	TU2-28	8	480	480	0.75	1.6
AC-6	TU2-29	8	370	370	0.75	1.5
AC-6	TU2-30	8	430	430	0.75	1.5
AC-6	TU2-31	6	150	150	0.75	1.0
AC-10	TU3-1*	16	1925	963	0.60	6.0
AC-10	TU3-2	6	110	55	0.40	0.5
AC-10	TU3-3*	14	1575	788	0.60	6.0
AC-10	TU3-4	10	775	388	0.50	2.0
AC-10	TU3-5	10	570	285	0.40	2.0
AC-10	TU3-6	10	295	295	0.40	1.0
AC-10	TU3-7					
AC-10	TU3-8	8	340	170	0.40	1.0
AC-10	TU3-9*	12	650	325	0.50	4.0
AC-10	TU3-10	12	685	343	0.50	4.0
AC-10	TU3-11	12	675	338	0.50	4.0
AC-10	TU3-12	12	770	385	0.50	4.0
AC-8	TU3-13*	12	910	455	0.50	4.0
AC-8	TU3-14	6	95	95	0.40	0.5
AC-8	TU3-15	8	240	240	0.40	1.0
AC-8	TU3-16	12	905	905	0.40	2.0
AC-8	TU3-17	6	160	80	0.40	0.5
AC-8	TU3-18	8	285	285	0.40	1.0
AC-8	TU3-19*	14	1420	1420	0.60	6.0
AC-8	TU3-20	10	565	283	0.40	2.0
AC-8	TU3-21	16	1900	1900	0.75	6.0
AC-8	TU3-22	8	500	250	0.40	1.0
AC-8	TU3-23	8	210	210	0.40	1.0
AC-8	TU3-24	12	895	895	0.40	2.0
AC-8	TU3-25	10	355	355	0.50	2.0
AC-8	TU3-26	10	300	300	0.50	2.0
AC-8	TU3-27	10	455	455	0.50	2.0
AC-8	TU3-28	10	505	505	0.40	2.0

NOTES:

1. EWT: 180° F, EAT: 55° F, REHEAT COIL SELECTED AT 50% OF MAX CFM, MAX WPD: 5 FT FOR VAV, 10 FT FOR CAV, MAX DISCHARGE NC: 27. UNITS WITH ASTERIX UTILIZE 3-WAY CONTROL VALVES, ALL OTHERS ARE 2-WAY.

ROOF CURB

MARK	DESCRIPTION
RC-8, 10	30" HIGH ROOF CURB WITH 1½" FACED INSULATION. FULLY-WELDED CONSTRUCTION WITH LOAD-DISTRIBUTING INTERNAL REINFORCEMENT. CURB SHALL BE CERTIFIED TO COMPLETELY SUPPORT WEIGHT OF AIR HANDLING UNIT AND INCLUDE ALL NECESSARY GASKETING, CLOSURE ANGLES, ETC. CURB SHALL BE CONSTRUCTED OF PRIMED AND PAINTED STEEL.

DATE	REVISIONS

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Approved : Supervisory Engineer | Approved : Director
Approved : VP FMS | Approved :

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

Drawing Title: SCHEDULES

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

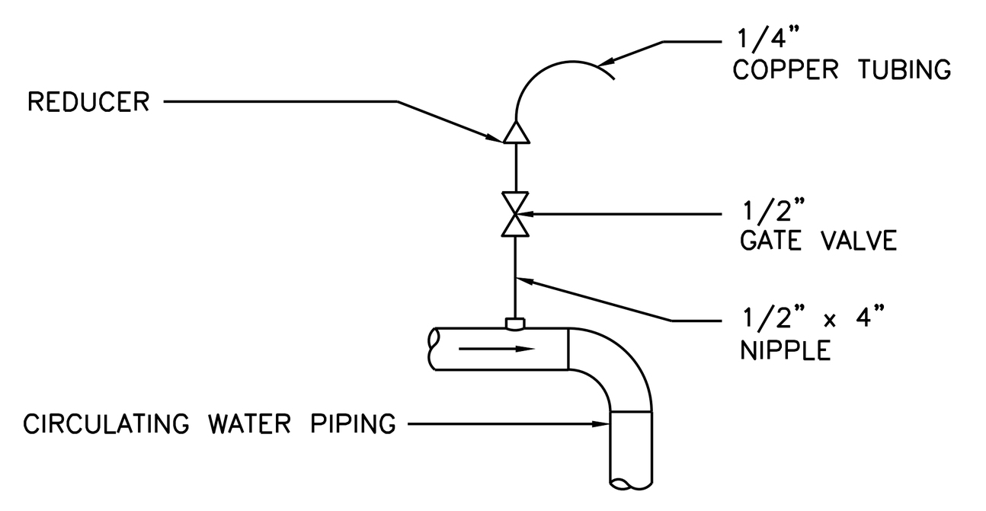
Building Number: 77

Checked: PM

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Drawing No. 77-MH5

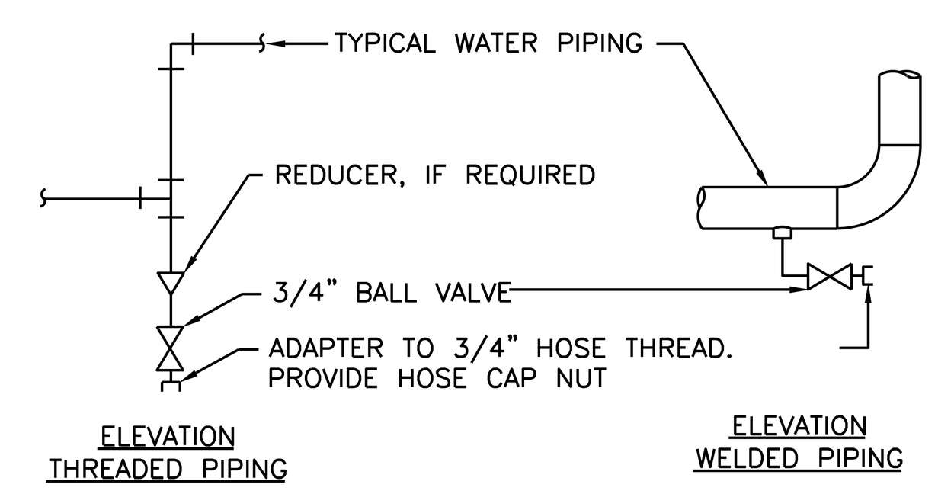
Department of Veterans Affairs



NOTES:

1. VENT ALL HIGH POINTS.
2. IF AUTOMATIC AIR VENTS ARE USED, PIPE DISCHARGE TO DRAIN

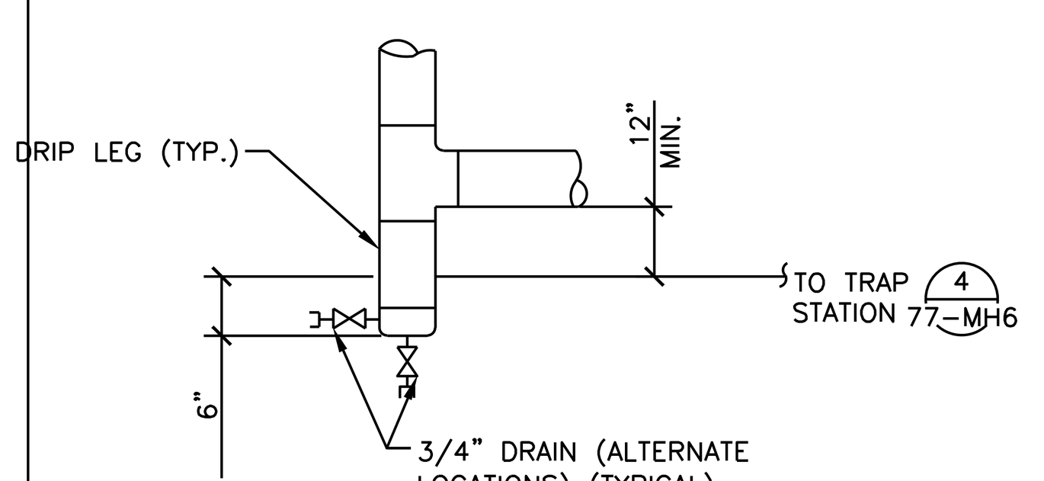
AIR VENT DETAIL (1 / 77-MH6)
SCALE: NONE



NOTES:

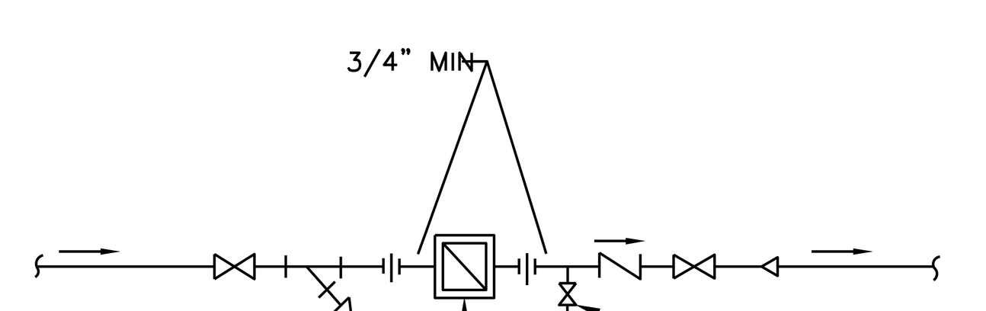
1. DRAIN ALL LOW POINTS.
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.

PIPING DRAIN VALVE CONNECTIONS (2 / 77-MH6)
SCALE: NONE

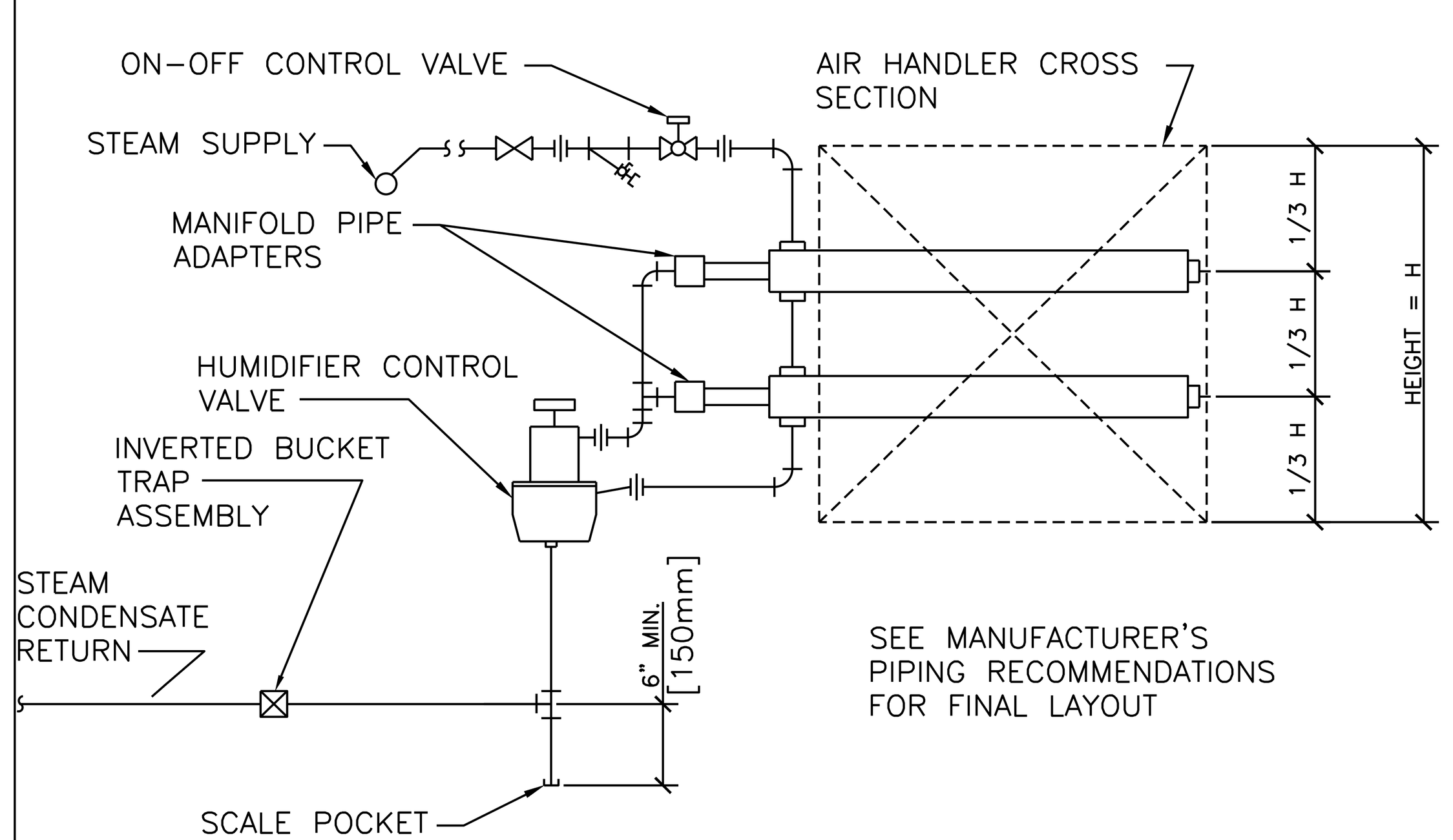


NOTE:
DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

DRIP LEG DETAIL (3 / 77-MH6)
SCALE: NONE

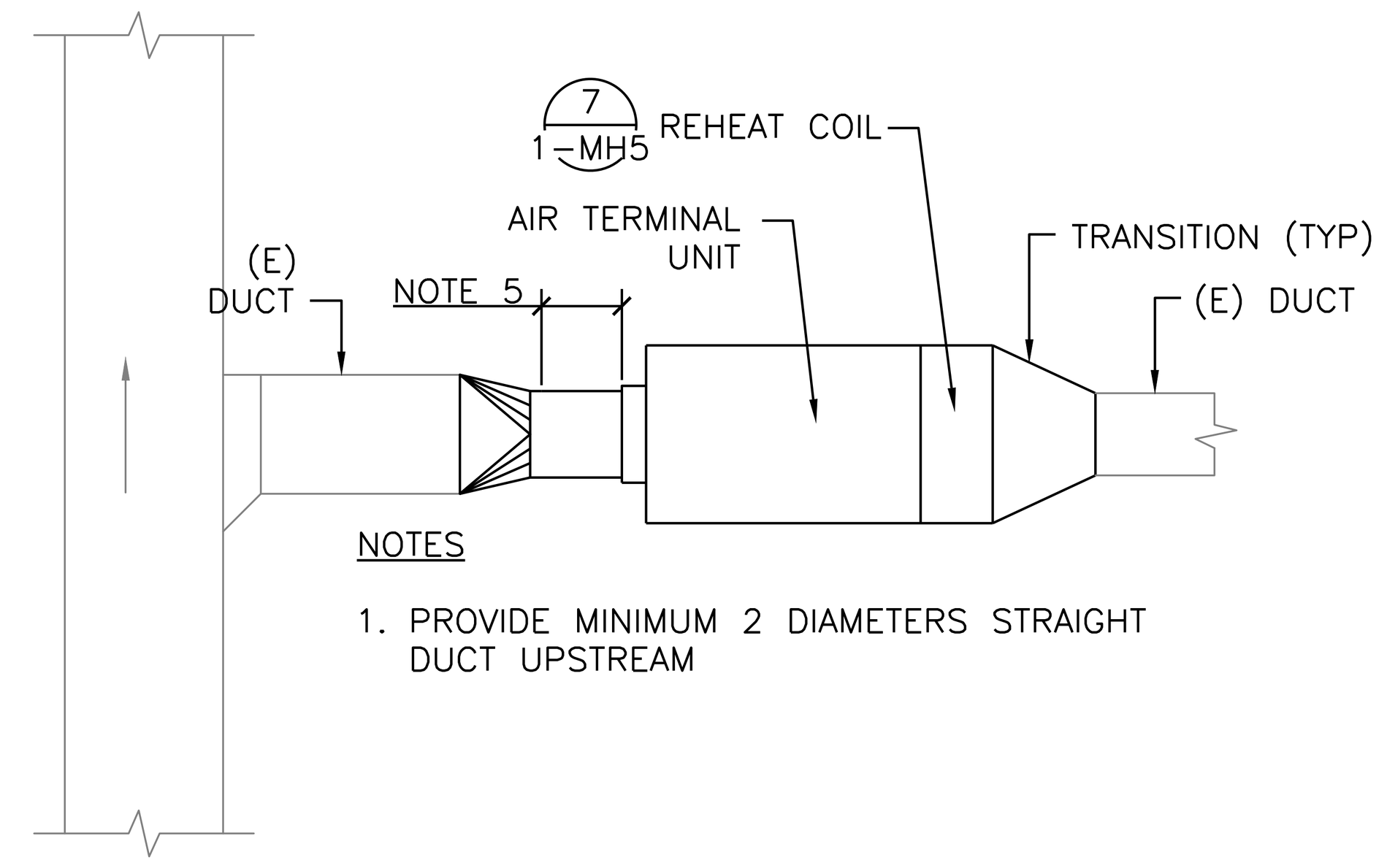


STEAM TRAP ASSEMBLY DETAIL (4 / 77-MH6)
SCALE: NONE



SEE MANUFACTURER'S PIPING RECOMMENDATIONS FOR FINAL LAYOUT

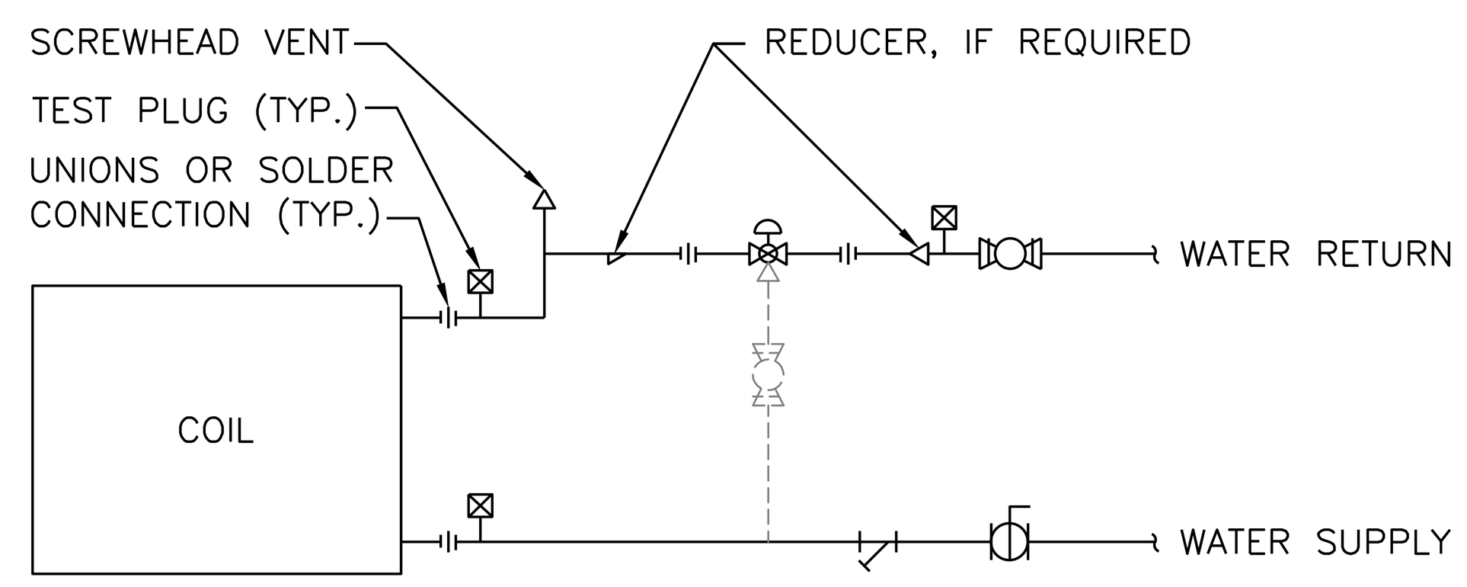
HUMIDIFIER DETAIL (5 / 77-MH6)
SCALE: NONE



NOTES

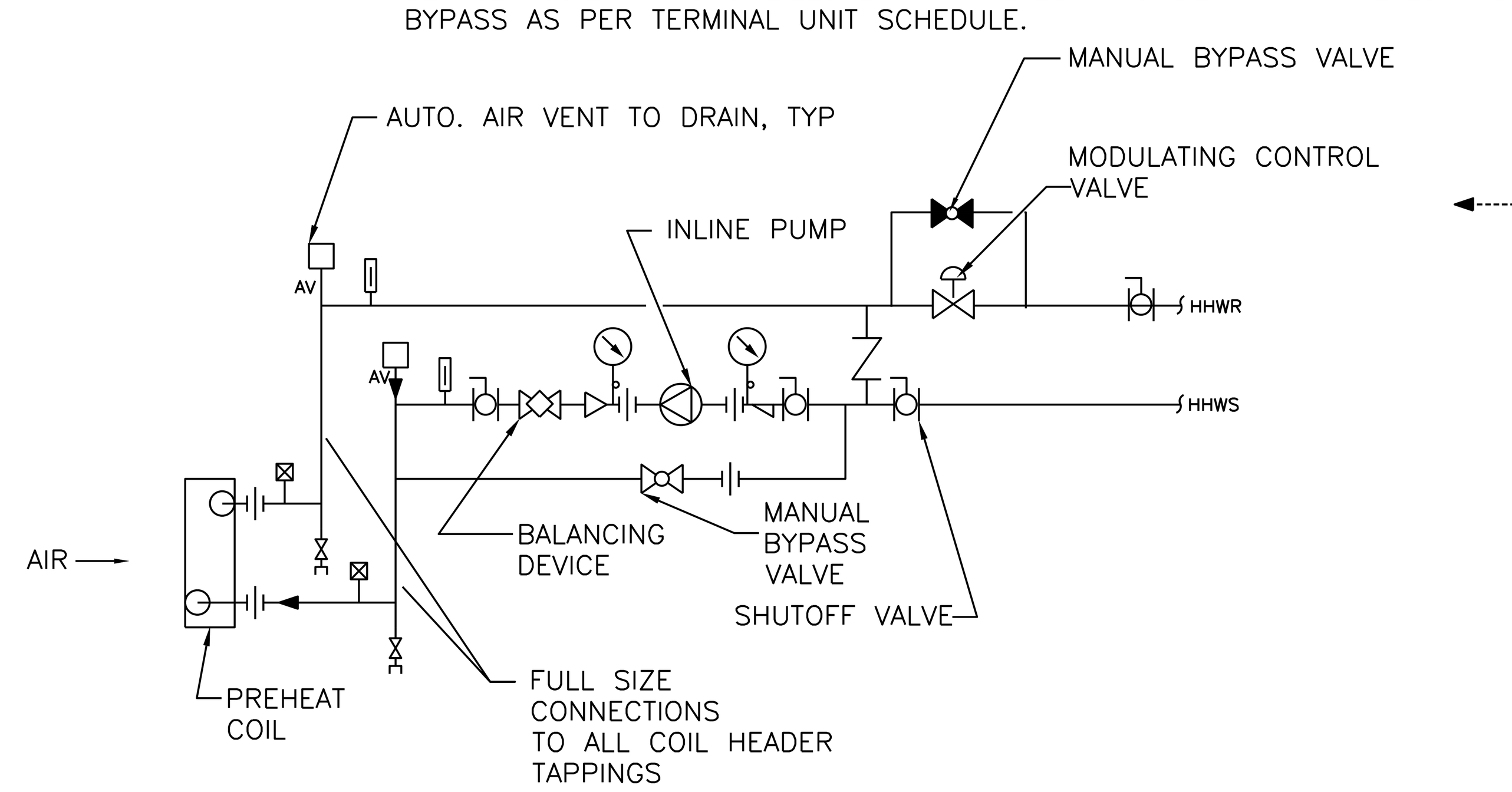
1. PROVIDE MINIMUM 2 DIAMETERS STRAIGHT DUCT UPSTREAM

TERMINAL UNIT DETAIL (6 / 77-MH6)
SCALE: NONE

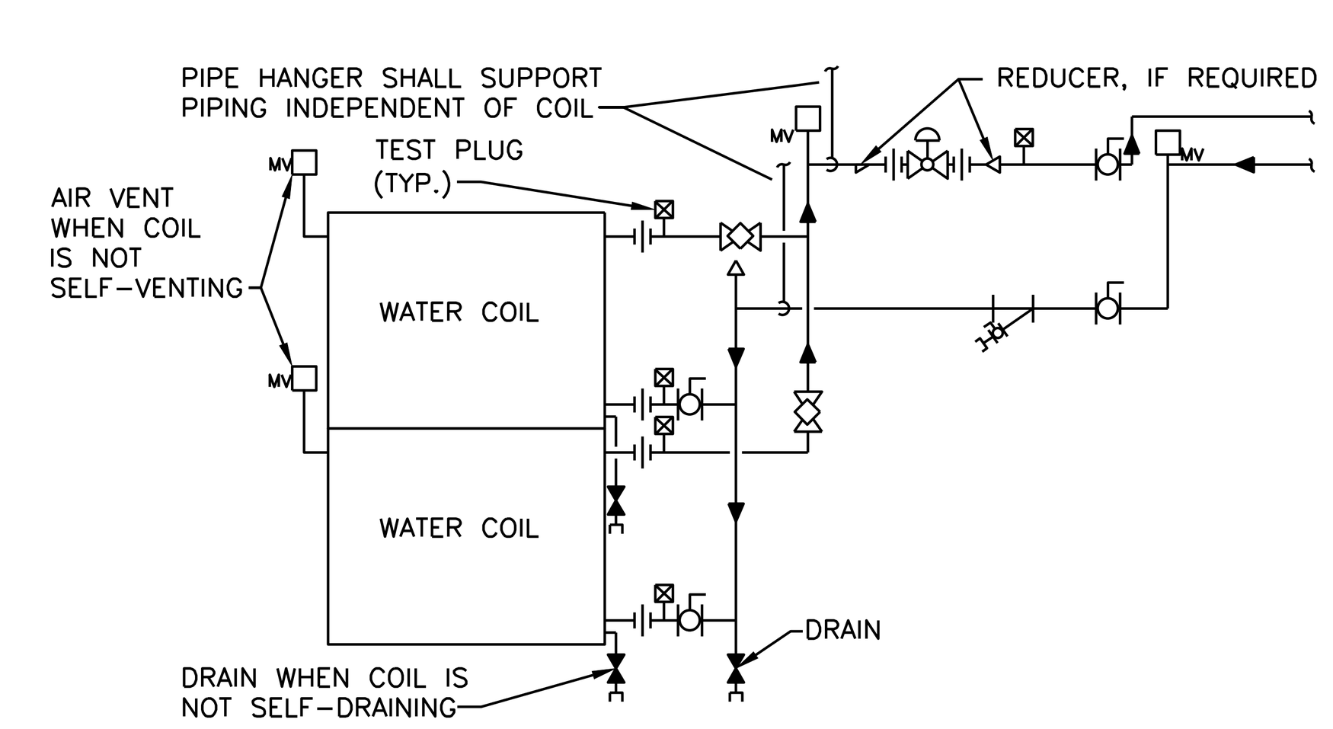


REHEAT COIL DETAIL (7 / 77-MH6)
SCALE: NONE

DEFAULT COIL PIPING UTILIZES 2-WAY VALVES. PROVIDE 3-WAY VALVES AND BYPASS AS PER TERMINAL UNIT SCHEDULE.

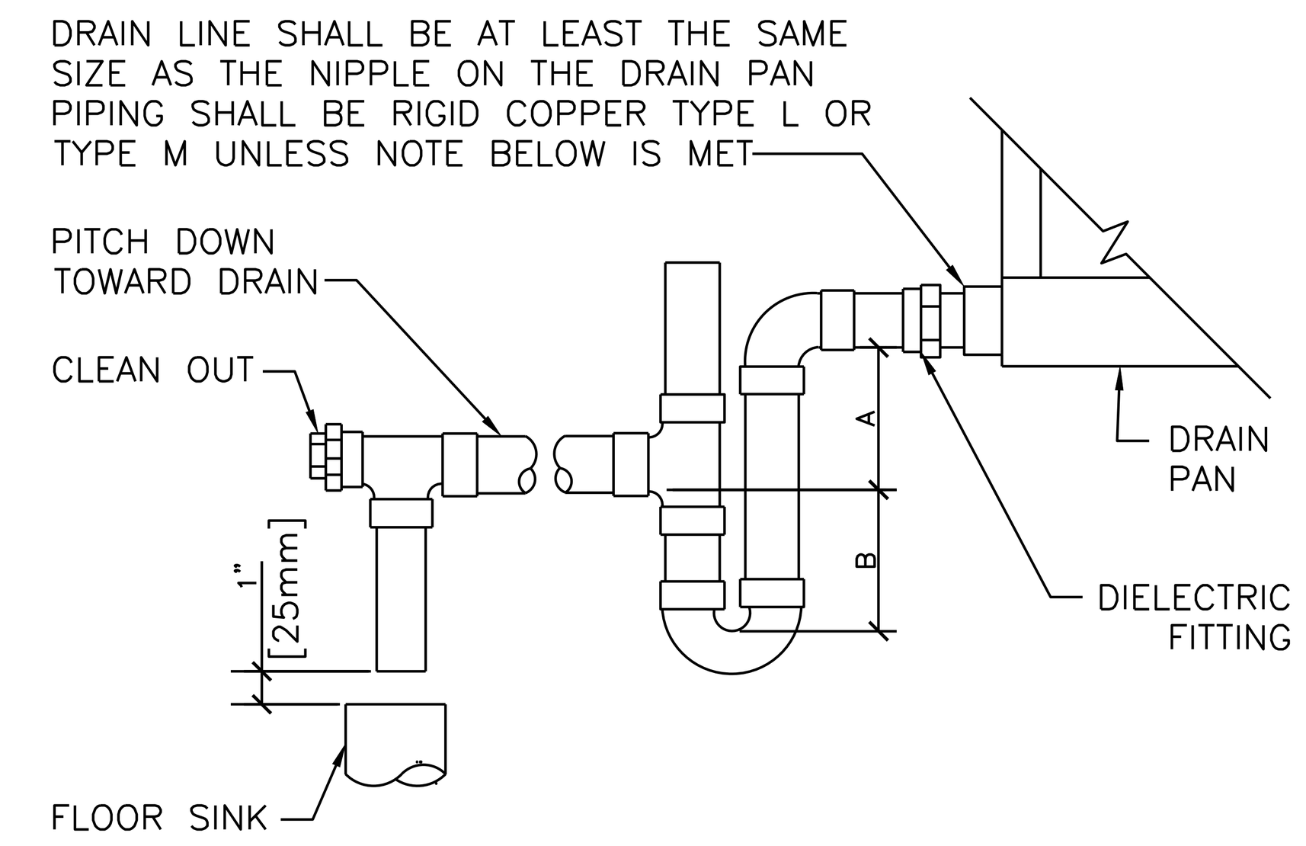


HOT WATER PREHEAT COIL PIPING (8 / 77-MH6)
SCALE: NONE



1. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS; NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALES, OR EQUIPMENT.

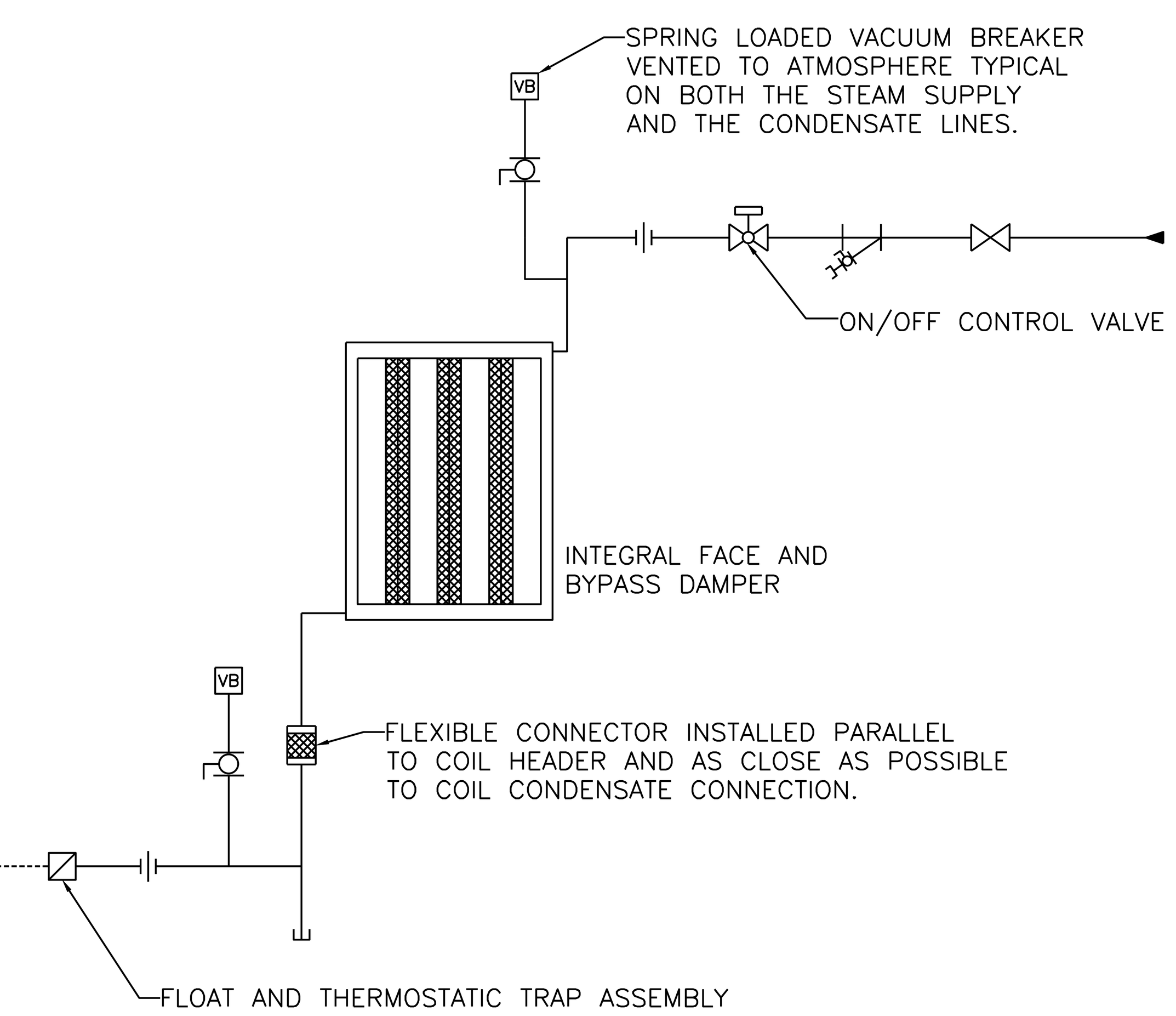
CHILLED WATER COIL PIPING (9 / 77-MH6)
SCALE: NONE



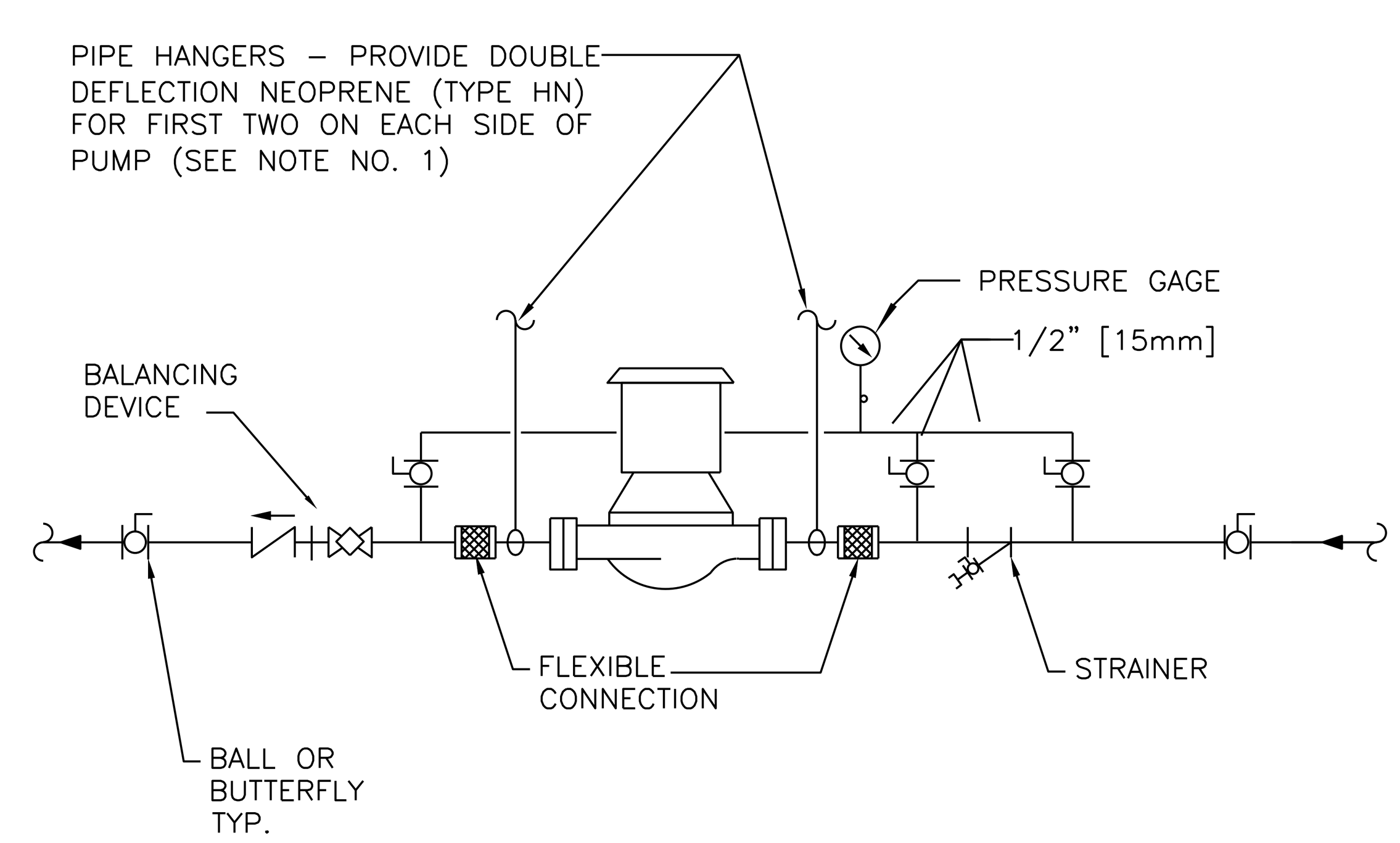
UNIT TYPE	A	B
DRAW THRU	2" [50mm] PLUS X	X

WHERE X = STATIC PRESSURE IN PAN

AIR HANDLER DRAIN DETAIL (10 / 77-MH6)
SCALE: NONE



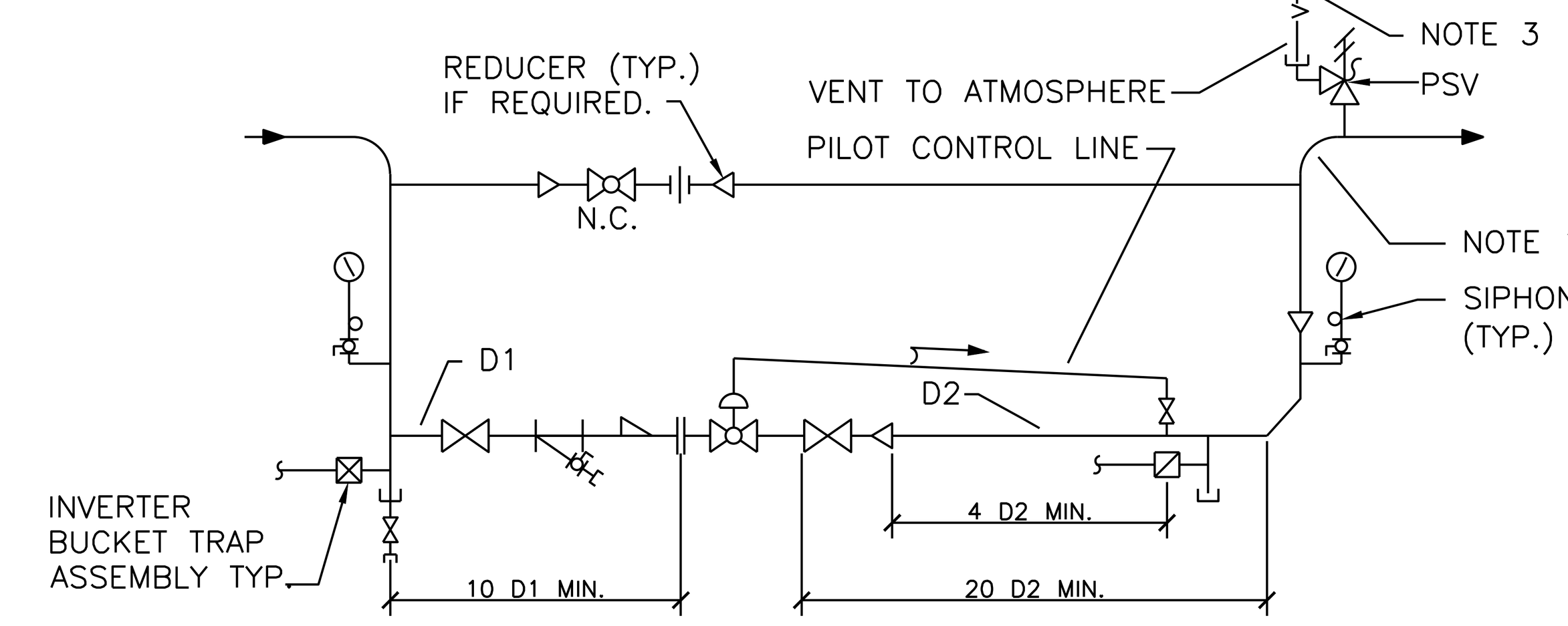
STEAM PREHEAT COIL DETAIL (11 / 77-MH6)
SCALE: NONE



NOTES:

1. SUPPORT PUMP FROM PIPING ONLY. DO NOT SUPPORT PUMP FROM MOTOR.

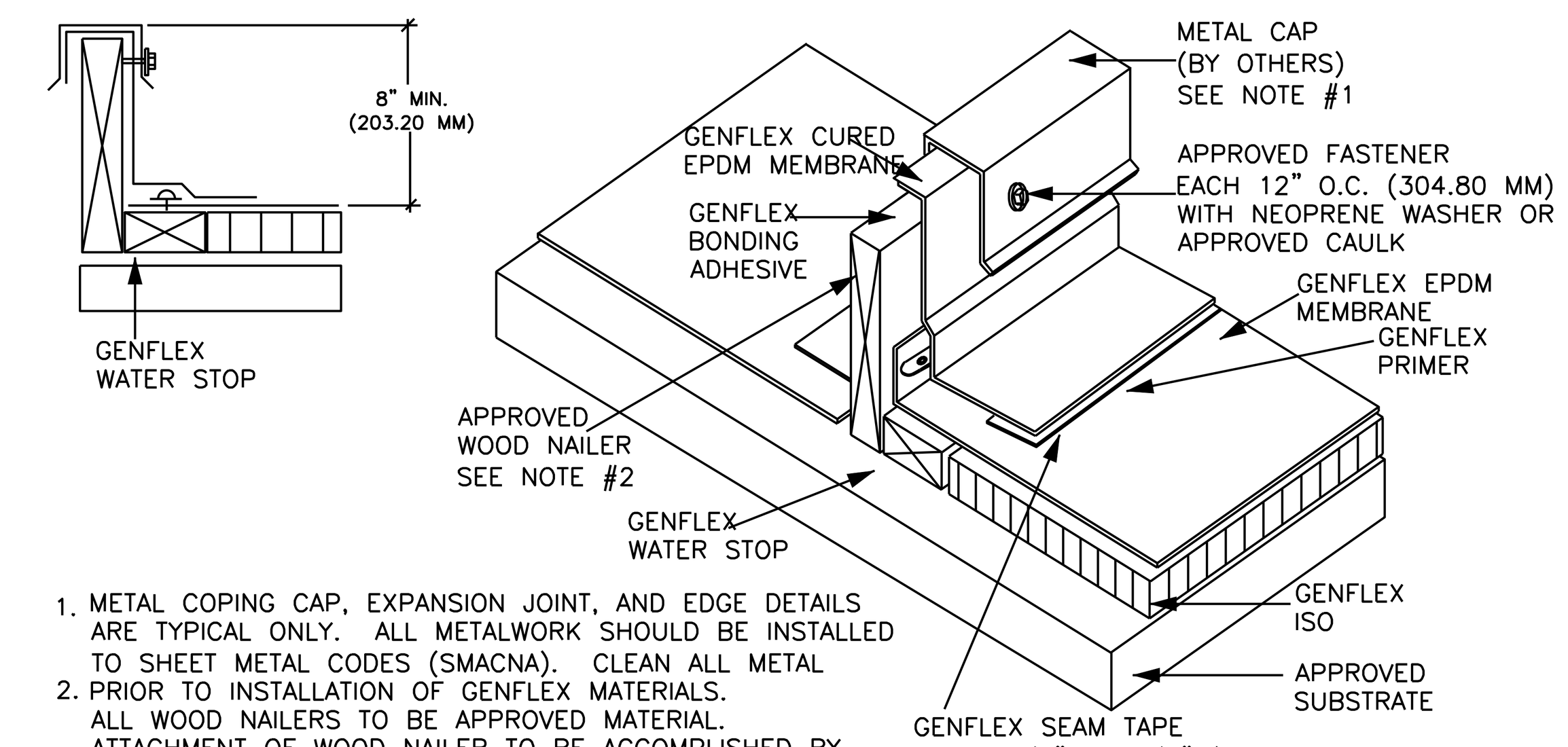
INLINE PUMP DETAIL (12 / 77-MH6)
SCALE: NONE



NOTES:

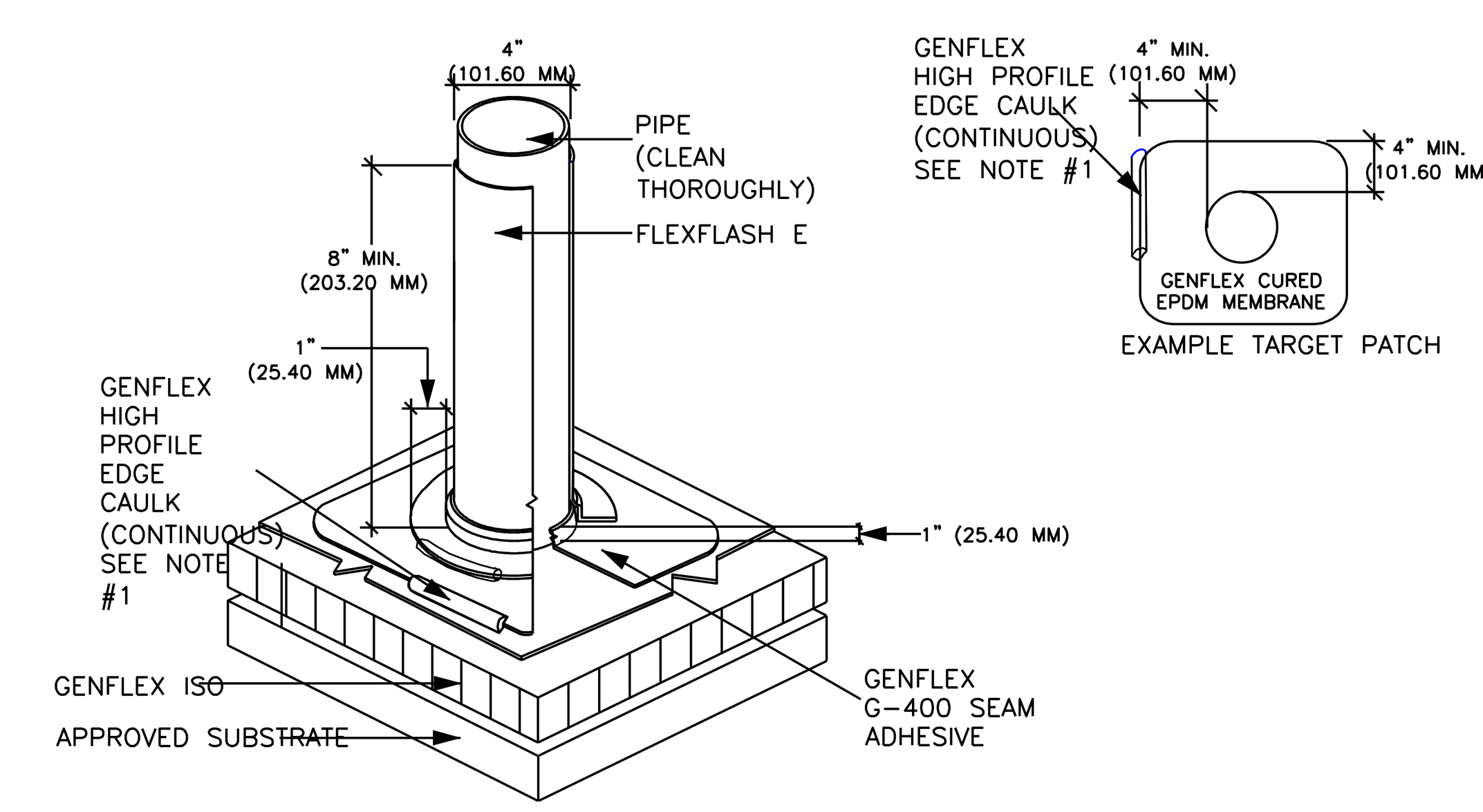
1. SEE FLOOR PLANS FOR PIPE SIZES.
2. MAKE BYPASS VALVE DISCHARGE PIPE THE SAME SIZE AS PRV DISCHARGE.
3. PROVIDE NECESSARY UNIONS FOR THE REMOVAL OF VALVE WITH SCREWED CONNECTIONS.

PRV STATION DETAIL (13 / 77-MH5)
SCALE: NONE



1. METAL COPING CAP, EXPANSION JOINT, AND EDGE DETAILS ARE TYPICAL ONLY. ALL METALWORK SHOULD BE INSTALLED TO SHEET METAL CODES (SMACNA). CLEAN ALL METAL
2. PRIOR TO INSTALLATION OF GENFLEX MATERIALS. ALL WOOD NAILERS TO BE APPROVED MATERIAL. ATTACHMENT OF WOOD NAILER TO BE ACCOMPLISHED BY
3. USING FASTENERS PROVIDING NO LESS THAN 125 LB (556.03 N) OF PULLOUT. FASTENERS SHALL BE SPACED NO GREATER THAN 24" O.C. (609.60 MM).
4. FOR SEAMS ASSEMBLED WITH GENFLEX G-400 SEAM ADHESIVE, A BEAD OF GENFLEX EDGE CAULK IS REQUIRED ON ALL EXPOSED EDGES, FOLLOWING A PRE-CLEANING OF THE SEAM AREA WITH GENFLEX CLEANER. WHEN USING GENFLEX SEAM TAPE AND GENFLEX BAR COVER TAPE, FIRST CLEAN THE MEMBRANE WITH GENFLEX CLEANER. THEN APPLY GENFLEX PRIMER.

CURB FLASHING DETAIL (14 / 77-MH6)
SCALE: NONE



1. FOR SEAMS ASSEMBLED WITH GENFLEX G-400 SEAM ADHESIVE, A BEAD OF GENFLEX EDGE CAULK IS REQUIRED ON ALL EXPOSED EDGES, FOLLOWING A PRE-CLEANING OF THE SEAM AREA WITH GENFLEX CLEANER.

PIPE FLASHING DETAIL (15 / 77-MH6)
SCALE: NONE

SCALE: 3/4"=1'-0" (0 2 4 8 12)
SCALE: 1/2"=1'-0" (0 2 4 8 12)
SCALE: 1/4"=1'-0" (0 2 4 8 12)
SCALE: 1/8"=1'-0" (0 2 4 8 12)

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Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

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Drawing Title: DETAILS

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621-11-127
Drawn: BMA
Building Number: 77
Drawing No.: 77-MH6
Checked: PM
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Department of Veterans Affairs

SCALE: 3/4"=1'-0"

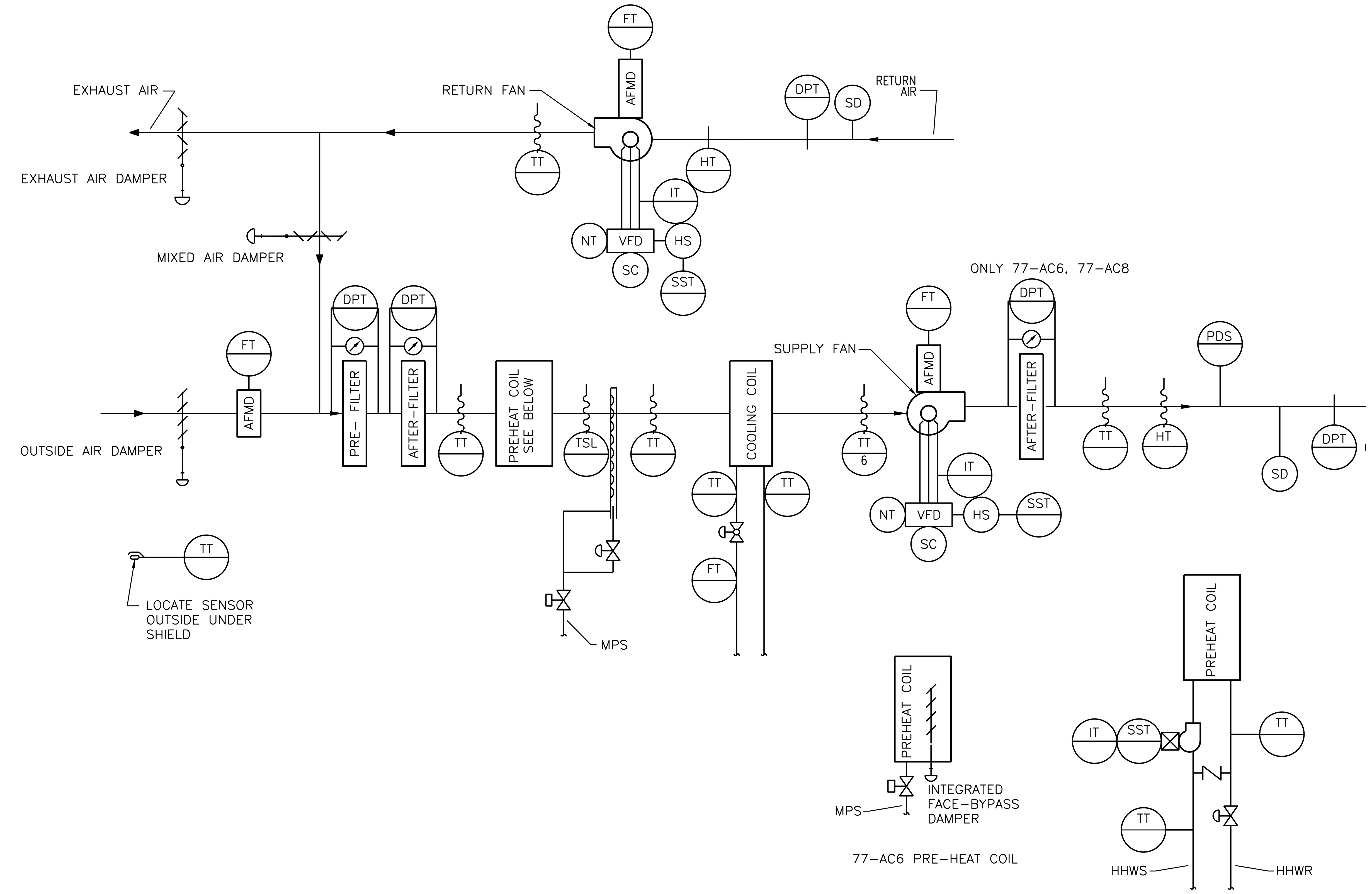
SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"

AIR HANDLER POINTS LIST (TYP 3)											
	HARDWARE POINTS				SOFTWARE POINTS						
POINT NAME	AI	AO	BI	BO	AV	BV	NET	SCHED	TREND	ALARM	SHOW ON GRAPHIC
SUPPLY AIR STATIC PRESSURE	X								X	X	X
SUPPLY AIRFLOW	X								X		X
RETURN AIRFLOW	X								X		X
SUPPLY AIR HUMIDITY	X								X		X
PREFILTER DIFFERENTIAL PRESSURE	X								X		
FINAL FILTER DIFFERENTIAL PRESSURE	X								X		
FINAL FILTER DIFFERENTIAL PRESSURE (77-AC6ONLY)	X										
MIXED AIR TEMP	X								X		X
RETURN AIR HUMIDITY	X								X		X
RETURN AIR TEMP	X								X		X
SUPPLY AIR TEMP	X								X		X
SUPPLY FAN VFD SPEED		X							X		X
RETURN FAN VFD SPEED		X							X		X
PREHEATING STEAM VALVE (77-AC6)				X					X		X
PREHEATING FACE/BYPASS DAMPER (77-AC6)	X										
PREHEATING PUMP (77-AC-8,10)				X							
PREHEATING PUMP STATUS (77-AC-8,10)			X								
PREHEATING HOT WATER VALVE (77-AC-8,10)		X									
COOLING VALVE		X							X		X
MIXED AIR DAMPERS		X							X		X
HUMIDIFIER VALVE		X							X		X
HUMIDIFIER JACKET VALVE				X							
FREEZESTAT			X						X	X	X
HIGH STATIC SHUTDOWN			X						X	X	X
RETURN AIR SMOKE DETECTOR			X						X	X	X
SUPPLY AIR SMOKE DETECTOR			X						X	X	X
SUPPLY FAN VFD FAULT			X							X	X
SUPPLY FAN STATUS			X						X		X
RETURN FAN VFD FAULT			X							X	
RETURN FAN STATUS			X						X		X
SUPPLY FAN START/STOP				X					X		X
RETURN FAN START/STOP				X					X		X
HUMIDIFIER ENABLE				X							X
SUPPLY AIR STATIC PRESSURE SETPOINT					X				X		X
RETURN AIRFLOW SETPOINT					X				X		X
PREHEATING MIXED AIR TEMP SETPOINT					X				X		X
SUPPLY AIR TEMP SETPOINT					X				X		X
ECONOMIZER MIXED AIR TEMP SETPOINT					X				X		X
HUMIDIFIER SETPOINT					X						X
EMERGENCY SHUTDOWN						X			X	X	X
HIGH SUPPLY AIR STATIC PRESSURE										X	
LOW SUPPLY AIR STATIC PRESSURE										X	
SUPPLY FAN FAILURE										X	
SUPPLY FAN IN HAND										X	
SUPPLY FAN RUNTIME EXCEEDED										X	
RETURN FAN FAILURE										X	
RETURN FAN IN HAND										X	
RETURN FAN RUNTIME EXCEEDED										X	
HIGH RETURN AIRFLOW										X	
LOW RETURN AIRFLOW										X	
HIGH SUPPLY AIR TEMP										X	
LOW SUPPLY AIR TEMP										X	
HIGH SUPPLY AIR HUMIDITY										X	
LOW SUPPLY AIR HUMIDITY										X	
PREFILTER CHANGE REQUIRED										X	X
FINAL FILTER CHANGE REQUIRED										X	X
HIGH MIXED AIR TEMP										X	
LOW MIXED AIR TEMP										X	
HIGH RETURN AIR HUMIDITY										X	
LOW RETURN AIR HUMIDITY										X	
HIGH RETURN AIR TEMP										X	
LOW RETURN AIR TEMP										X	
HIGH SUPPLY AIR TEMP										X	
LOW SUPPLY AIR TEMP										X	
CHILLED WATER FLOW	X									X	
CHILLED WATER INLET TEMPERATURE	X									X	
CHILLED WATER OUTLET TEMPERATURE	X									X	
PRE-HEAT COIL INLET TEMPERATURE (AC-8,10)	X									X	
PRE-HEAT COIL OUTLET TEMPERATURE (AC-8,10)	X									X	

TERMINAL UNIT POINTS LIST (TYP 59)											
	HARDWARE POINTS				SOFTWARE POINTS						
POINT NAME	AI	AO	BI	BO	AV	BV	NET	SCHED	TREND	ALARM	SHOW ON GRAPHIC
ZONE TEMP	X								X		X
ZONE SETPOINT ADJUST	X								X		X
AIRFLOW	X								X		X
DISCHARGE AIR TEMPERATURE	X								X		X
ZONE DAMPER		X							X		X
REHEAT VALVE		X							X		X
AIRFLOW SETPOINT MAX					X						X
AIRFLOW SETPOINT MIN					X				X		X
HIGH ZONE TEMP									X	X	X
LOW ZONE TEMP									X	X	X
HIGH DISCHARGE AIR TEMP									X	X	X
LOW DISCHARGE AIR TEMP										X	X

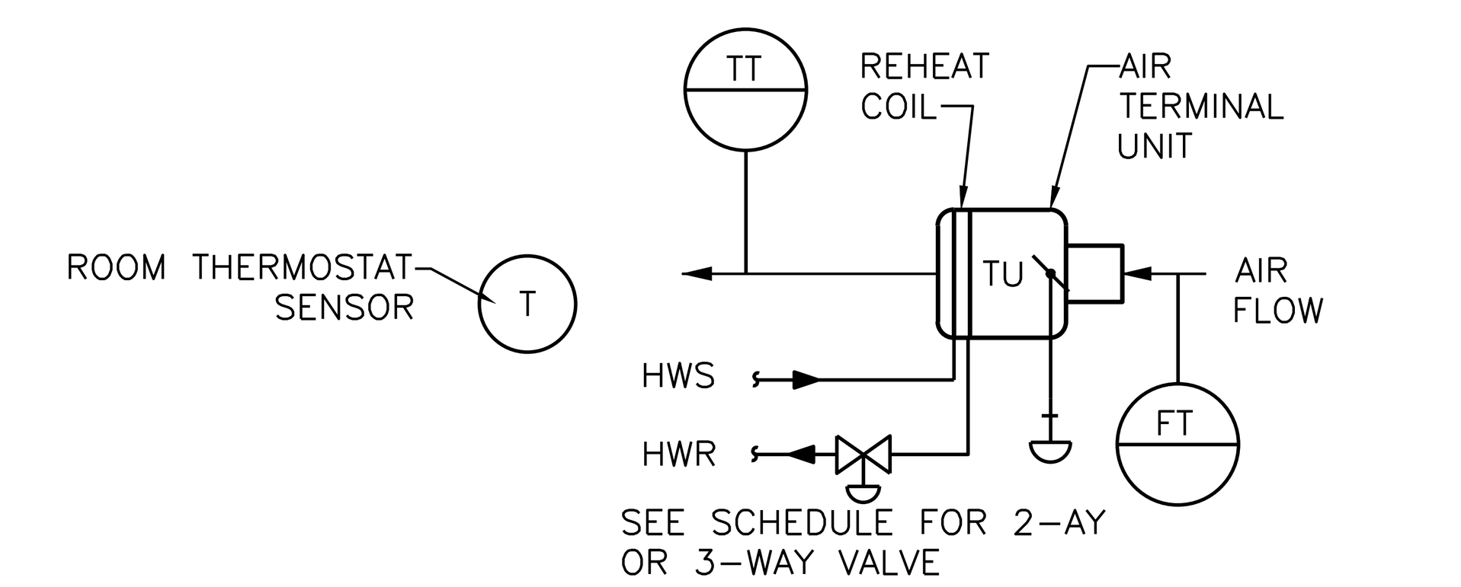


AIR HANDLER CONTROL DIAGRAM (1 / 77-MH7)

SCALE: NONE

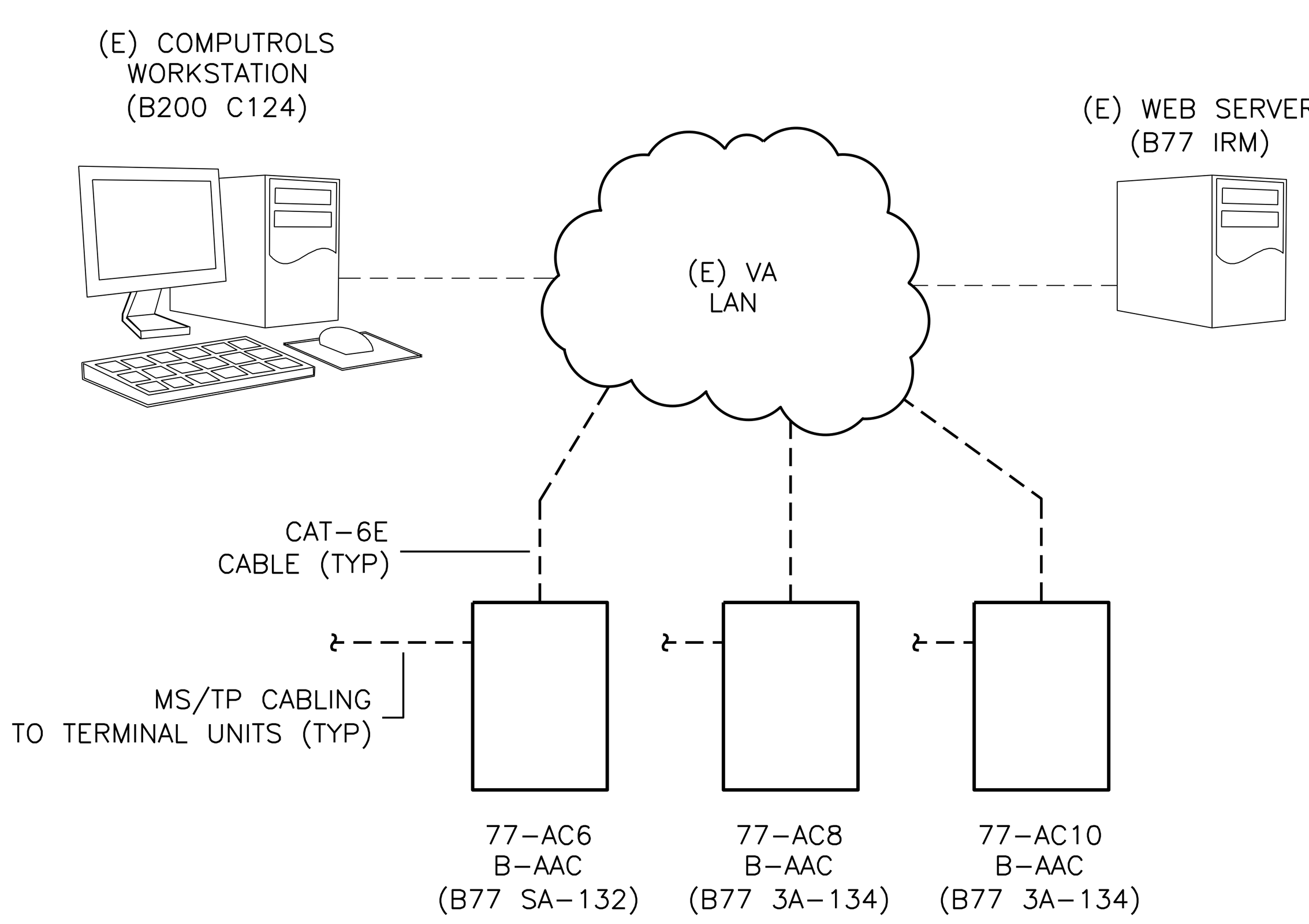
CONTROLS SYMBOLS

T	ROOM THERMOSTAT/TRANSMITTER – WALL MOUNT
TT	TEMPERATURE TRANSMITTER
TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
HT	MOISTURE (HUMIDITY) TRANSMITTER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
SPS	STATIC PRESSURE SENSOR
FT	FLOW TRANSMITTER
IT	CURRENT TRANSMITTER
SD	SMOKE DETECTOR
PDT	PRESSURE DIFFERENTIAL TRANSMITTER
PDS	PRESSURE DIFFERENTIAL SWITCH
HS	HAND SWITCH (HAND-OFF-AUTO SWITCH)
TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
VFD	VARIABLE FREQUENCY DRIVE
	DAMPER
	MOTOR STARTER
	VALVE OR DAMPER ACTUATOR (MODULATING)
	VALVE OR DAMPER ACTUATOR (TWO-POSITION)
	CONTROL VALVE (SEE SPECIFICATIONS FOR TYPE)
SC	SPEED CONTROL
NT	BACNET NETWORK CONNECTION
B-AAC	BACNET APPLICATION AREA CONTROLLER



TERMINAL UNIT CONTROL DIAGRAM (2 / 77-MH7)

SCALE: NONE



NETWORK DIAGRAM (3 / 77-MH7)

SCALE: NONE

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REGISTERED PROFESSIONAL ENGINEER · PAUL MCDONALD · No. 15043 · MECHANICAL · STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: CONTROLS - DIAGRAMS AND POINTS LIST

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Checked: PM

Building Number: 77

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Drawing No. 77-MH7

Dwg 13 of 20

Department of Veterans Affairs

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"

VARIABLE AIR VOLUME – AHU (TYPICAL OF 3)

RUN CONDITIONS – CONTINUOUS:
THE UNIT SHALL RUN CONTINUOUSLY.

EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

HIGH STATIC SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN HIGH STATIC SHUTDOWN SIGNAL.

RETURN AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

SUPPLY AIR SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SUPPLY AIR SMOKE DETECTOR STATUS.

SUPPLY FAN:
THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR DUCT STATIC PRESSURE CONTROL:
THE CONTROLLER SHALL MEASURE DUCT STATIC PRESSURE AND MODULATE THE SUPPLY FAN VFD SPEED TO MAINTAIN A DUCT STATIC PRESSURE SETPOINT. THE SPEED SHALL NOT DROP BELOW 30% (ADJ.). THE STATIC PRESSURE SETPOINT SHALL BE RESET BASED ON ZONE COOLING REQUIREMENTS.
THE INITIAL DUCT STATIC PRESSURE SETPOINT SHALL BE 1.5IN H2O (ADJ.).
AS COOLING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 1.8IN H2O (ADJ.).
AS COOLING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 1.3IN H2O (ADJ.) .

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
LOW SUPPLY AIR STATIC PRESSURE: IF THE SUPPLY AIR STATIC PRESSURE IS 25% (ADJ.) LESS THAN SETPOINT.
SUPPLY FAN VFD FAULT.

RETURN FAN:
THE RETURN FAN SHALL RUN WHENEVER THE SUPPLY FAN RUNS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
RETURN FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
RETURN FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
RETURN FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
RETURN FAN VFD FAULT.

RETURN AIRFLOW:
THE RETURN FAN VFD SHALL MODULATE IN UNISON WITH THE SUPPLY FAN VFD. RETURN AIRFLOW SETPOINT SHALL BE 100% (ADJ.) OF THE SUPPLY AIRFLOW MINUS THE MINIMUM OUTSIDE AIR QUANTITY (ADJ.). THE RETURN FAN VFD SPEED SHALL NOT DROP BELOW 20% (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH RETURN AIRFLOW: IF THE RETURN AIRFLOW IS AN ADJUSTABLE PERCENTAGE GREATER THAN SETPOINT.
LOW RETURN AIRFLOW: IF THE RETURN AIRFLOW IS AN ADJUSTABLE PERCENTAGE LESS THAN SETPOINT.

THE PREHEATING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F (ADJ.).
AND THE ECONOMIZER (IF PRESENT) IS DISABLED.
AND THE SUPPLY FAN STATUS IS ON.

(77–AC6 ONLY) PREHEATING COIL STEAM VALVE:
THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND SHALL OPEN THE STEAM VALVE AND MODULATE THE INTEGRAL FACE AND BYPASS DAMPERS TO MAINTAIN ITS SETPOINT 5°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT.

(77–AC6 ONLY) THE PREHEATING COIL STEAM VALVE SHALL OPEN FOR FREEZE PROTECTION WHENEVER:
MIXED AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.).
OR THE FREEZESTAT (IF PRESENT) IS ON.

(77–AC8, 10 ONLY) PREHEATING COIL HOT WATER VALVE:
THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND SHALL MODULATE HOT WATER VALVE TO MAINTAIN ITS SETPOINT 5°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT.

(77–AC8, 10 ONLY) THE PREHEATING COIL HOT VALVE SHALL OPEN FOR FREEZE PROTECTION WHENEVER:
MIXED AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.).
OR THE FREEZESTAT (IF PRESENT) IS ON.

(77–AC8, 10 ONLY) PREHEATING COIL PUMP:
THE RECIRCULATION PUMP SHALL RUN WHENEVER:
THE PREHEATING COIL VALVE IS ENABLED.
OR THE FREEZESTAT (IF PRESENT) IS ON.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
PREHEATING COIL PUMP FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
PREHEATING COIL PUMP IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
PREHEATING COIL PUMP RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

SUPPLY AIR TEMPERATURE SETPOINT – OPTIMIZED:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL MAINTAIN A SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON ZONE COOLING AND HEATING REQUIREMENTS

THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR COOLING BASED ON ZONE COOLING REQUIREMENTS AS FOLLOWS:
THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 55°F (ADJ.).
AS COOLING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 53°F (ADJ.).
AS COOLING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 72°F (ADJ.) .

IF MORE ZONES NEED HEATING THAN COOLING, THEN THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR HEATING AS FOLLOWS:
THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 82°F (ADJ.).
AS HEATING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 85°F (ADJ.).
AS HEATING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 72°F (ADJ.).

COOLING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS COOLING SETPOINT.

THE COOLING SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
AND THE ECONOMIZER (IF PRESENT) IS DISABLED OR FULLY OPEN.
AND THE SUPPLY FAN STATUS IS ON.
AND THE HEATING (IF PRESENT) IS NOT ACTIVE.

THE COOLING COIL VALVE SHALL OPEN TO 50% (ADJ.) WHENEVER THE FREEZESTAT (IF PRESENT) IS ON.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) GREATER THAN SETPOINT.

LOW SUPPLY AIR TEMPERATURE ALARM:
THE CONTROLLER SHALL ALARM IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

ECONOMIZER:
THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 20% (ADJ.) OPEN WHENEVER OCCUPIED.

THE ECONOMIZER SHALL BE ENABLED WHENEVER:
OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
AND THE SUPPLY FAN STATUS IS ON.

THE ECONOMIZER SHALL CLOSE WHENEVER:
MIXED AIR TEMPERATURE DROPS FROM 40°F TO 35°F (ADJ.).
OR THE FREEZESTAT (IF PRESENT) IS ON.
OR ON LOSS OF SUPPLY FAN STATUS.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START UP IS AVAILABLE THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED.

MINIMUM OUTSIDE AIR VENTILATION – FIXED PERCENTAGE:
THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS.

HUMIDIFIER CONTROL:
THE CONTROLLER SHALL MEASURE THE RETURN AIR HUMIDITY AND MODULATE THE HUMIDIFIER TO MAINTAIN A SETPOINT OF 50% RH (ADJ.). THE HUMIDIFIER SHALL BE ENABLED WHENEVER THE SUPPLY FAN STATUS IS ON AND THE COOLING COIL VALVE STATUS IS OFF.

THE HUMIDIFIER SHALL TURN OFF WHENEVER:
SUPPLY AIR HUMIDITY RISES FROM 90% RH TO 95% RH (ADJ.).
OR ON LOSS OF SUPPLY FAN STATUS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH SUPPLY AIR HUMIDITY: IF THE SUPPLY AIR HUMIDITY IS GREATER THAN 90% RH (ADJ.).
LOW SUPPLY AIR HUMIDITY: IF THE SUPPLY AIR HUMIDITY IS LESS THAN 30% RH (ADJ.).

PREFILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

FINAL FILTER(S) DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

MIXED AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMPERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL OR PREHEATING CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

RETURN AIR HUMIDITY:
THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE AS REQUIRED FOR ECONOMIZER CONTROL OR HUMIDITY CONTROL.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70% (ADJ.).
LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 35% (ADJ.).

RETURN AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR SETPOINT CONTROL OR ECONOMIZER CONTROL (IF PRESENT).

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.).
LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

VARIABLE AIR VOLUME – TERMINAL UNIT (TYPICAL OF 59)

RUN CONDITIONS – CONTINUOUS:
THE UNIT SHALL RUN CONTINUOUSLY AND SHALL MAINTAIN:
A 74°F (ADJ.) COOLING SETPOINT
A 70°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).
LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

REVERSING VARIABLE VOLUME TERMINAL UNIT – FLOW CONTROL:
THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

OCCUPIED:
WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.
WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.).
WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT.

REHEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT.

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:
HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).
LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

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Approved :

Drawing Title: CONTROLS - SEQUENCE OF OPERATIONS

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

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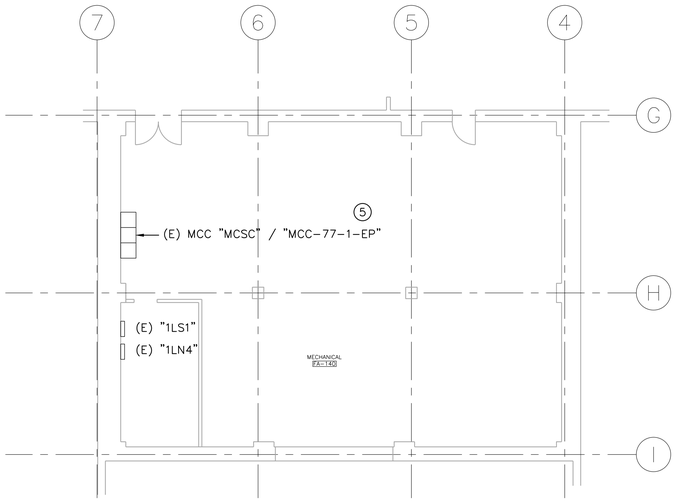
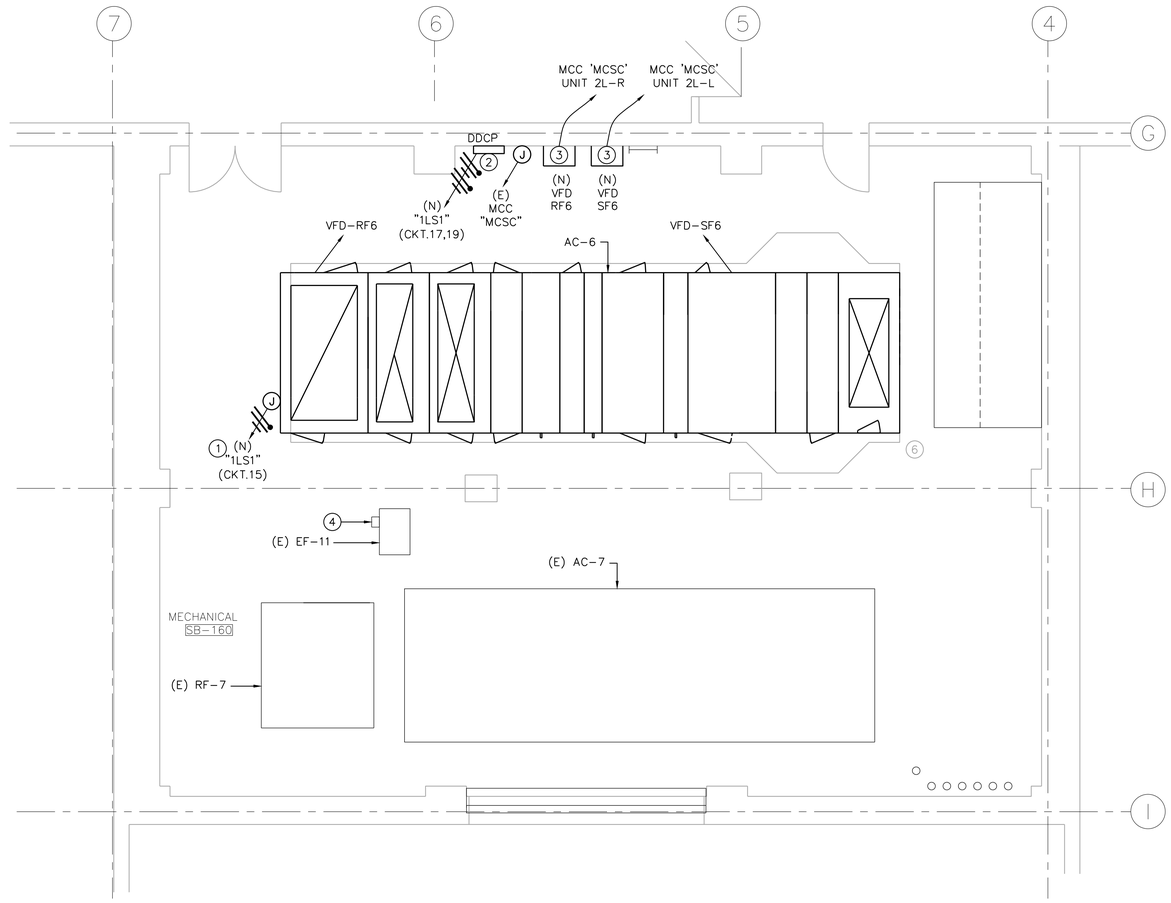
Dwg 13 of 20

Department of Veterans Affairs



SCALE: 3/4"=1'-0"

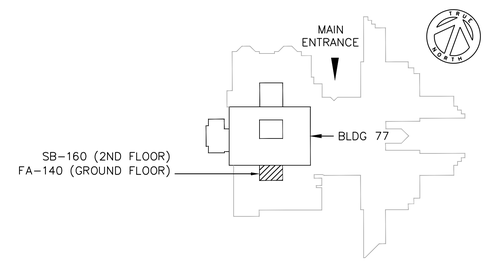
ROOM FA-140
1/8" = 1-'0"



SCALE: 1/2"=1'-0"

ROOM SB-160
1/4" = 1-'0"

SCALE: 1/4"=1'-0"



KEY PLAN
NOT TO SCALE

SCALE: 1/8"=1'-0"

NUMBERED NOTES (X)

1. 120V POWER CIRCUIT FOR AIR HANDLER RECEPTACLE AND LIGHTING. SEE DWG. 77-ES3.
2. 120V POWER CIRCUIT FOR DDC CONTROL PANEL. CONTROL CONTRACTOR RESPONSIBLE FOR ENCLOSURE AND CLASS 2 TRANSFORMERS. SEE DWG. 77-ES3.
3. MOUNT VFD ON UNISTRUT FRAMEWORK
4. RELOCATED DISCONNECT FOR (E) EF-11. EXTEND (E) WIRE AND CONDUIT TO NEW LOCATION. MOUNT DISCONNECT ON UNISTRUT FRAMEWORK.
5. PROVIDE NEW SOURCE BREAKERS FOR VFD-SF6 AND VFD-RF6 IN (E) MCSC. SEE DWG. 77-ES4.
6. VERIFY EXISTING GROUND CONDUCTOR'S INTEGRITY AND CONTINUITY TO GROUND. INSTALL EXISTING LIGHTNING RODS, LAYING LOSE ON ROOF, ON AH UNIT, AND CONNECT AND BOND EXISTING GROUND WIRE TO RODS AND TO NEW UNIT.

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER — ELI YAGOR — No. E 012911 — ELECTRICAL — STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: ELECTRICAL - ROOM SB-160, FA-140

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Building Number: 77

Checked: PM

Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Drawing No. 77-ES1

Dwg 15 of 20

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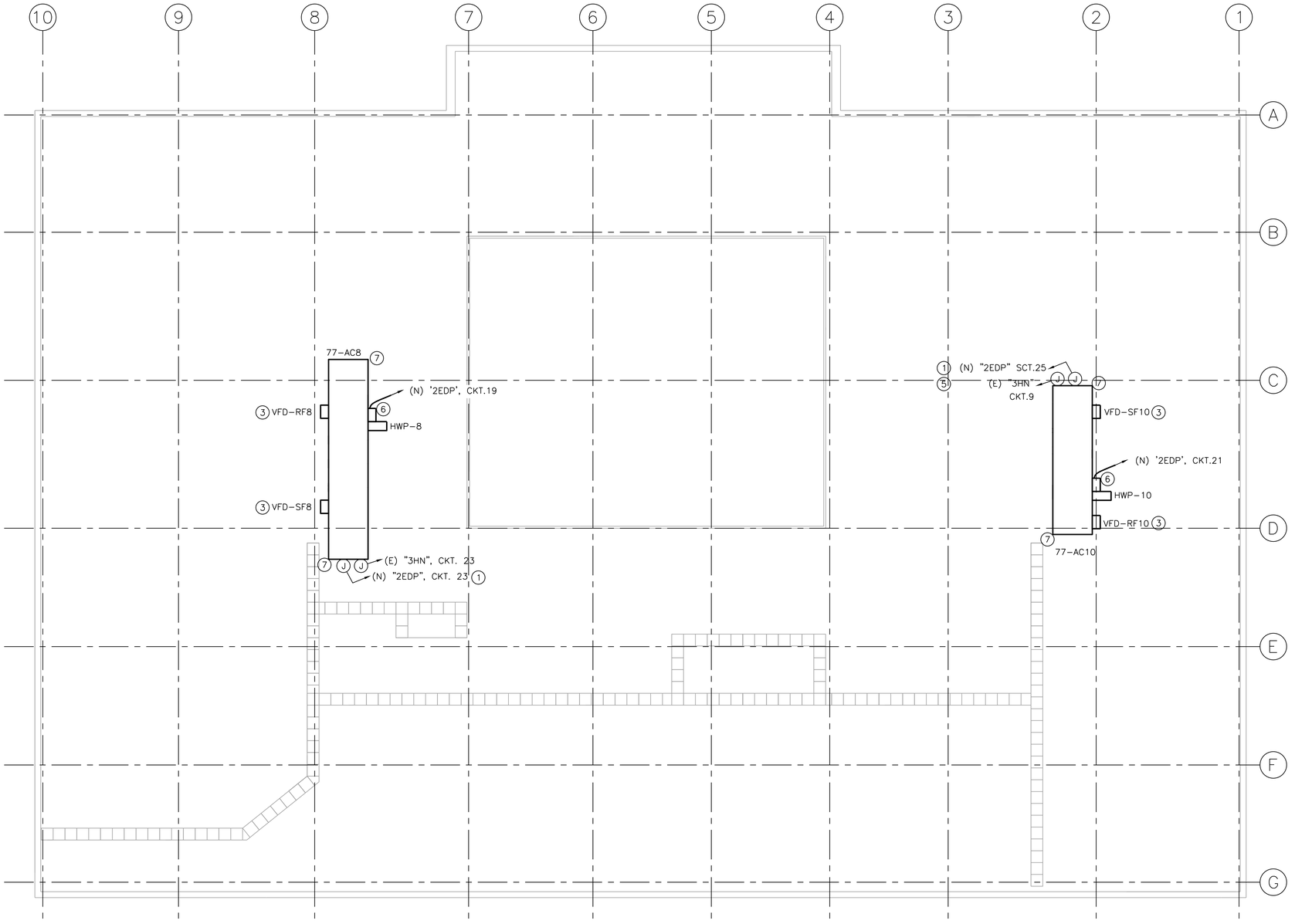


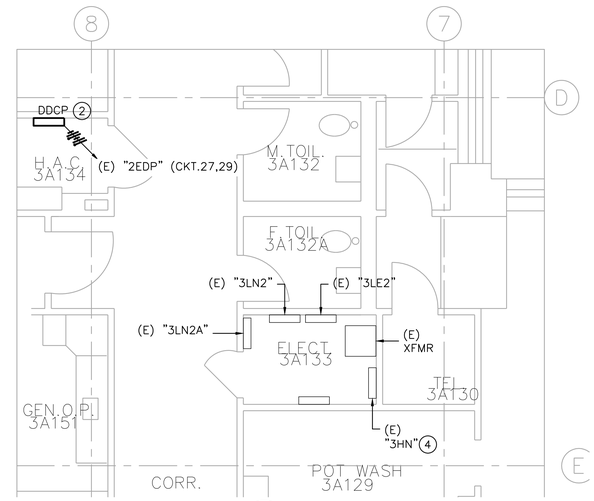
ROOF PLAN
1/8" = 1'-0"

SCALE: 3/4"=1'-0"

SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"

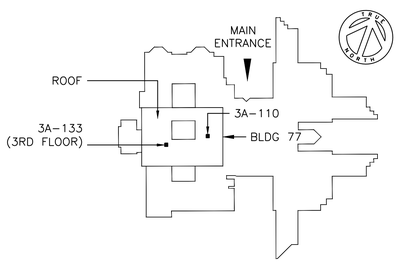


ROOM 3A-133
1/4" = 1'0"

ROOM 3A-110
1/4" = 1'0"

NUMBERED NOTES ⓧ

1. 120V POWER CIRCUIT FOR AIR HANDLER RECEPTACLE AND LIGHTING.
2. 120V POWER CIRCUIT FOR DDC CONTROL PANEL. CONTROL CONTRACTOR RESPONSIBLE FOR ENCLOSURE AND CLASS 2 TRANSFORMERS.
3. MOUNT VFD.
4. PROVIDE NEW SOURCE BREAKERS FOR AC-8 AND AC-10 IN (E) "3HN".
5. U.O.N., ALL 120V. SEE PANEL SCHEDULE ON 77-ES3. CKTS. ARE 3-1/C#12.
6. FURNISH & INSTALL FOR EACH HWP, NEMA3R COMBINATION SINGLE PHASE STARTER, MAGNETIC, W/OVERLOAD RESET BUTTON & INDICATING LIGHTS, AND HOA SWITCH. CONTACTOR/STARTER CAN BE 2 POLE. PRIMARY DISCONNECT SHALL BE A THERMAL-MAGNETIC BREAKER, 15A, 14 kAIC.
7. FURNISH & INSTALL 2', COPPER LIGHTING ROD & CLAMPS, 2 PER AC UNIT. GROUND TO (E) EQUIP. GROUND WIRE W/#1/0 MIN. COPPER CONDUCTOR, USING MECHANICAL CONNECTOR. RECONNECT (E) EQUIPMENT GROUND CONDUCTOR TO (N) AC-8 & AC-10.



KEY PLAN
NOT TO SCALE

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER — G.F. YAGOW — No. E 012911 — ELECTRICAL — STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: ELECTRICAL - ROOM 3A-133 AND ROOF PLAN

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621-11-127
Drawn: ---
Building Number: 77
Drawing No. 77-ES2
Checked: ---
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN
Dwg 16 of 20

Department of Veterans Affairs

SCHEDULE - PANEL '3HN'

LOCATION: RM. 3A133
DRAWING: 77–ES2

TYPE: MOLDED CASE, SURFACE MTD, NEMA 1, 600A MLO BUS
TRANSFORMER: N/A

SYSTEM: 480/277V, 3ø, 4W
SOURCE:

DESCRIPTION	LOAD VA			LOAD VA	DESCRIPTION
77–EF27	–	1	2	–	77–EF26
	–			–	
	–			–	
77–EF30	–	3	4	–	LATHES
	–			–	
	–			–	
SPACE	–	5	6	–	SPACE
	–			–	
	–			–	
PANEL '3LN1' VIA XFMR	–	7	8	–	PANEL '3LN2' VIA XFMR
	–			–	
	–			–	
77–AC10 (20HP + 3 HP) VFD'S	8813	9	10	–	77–EF3
	8813			–	
	8813			–	
77–AC9	–	11	12	–	77–EF10
	–			–	
	–			–	
77–AC8 (15HP + 3 HP) VFD'S	7150	13	14	–	SPACE
	7150			–	
	7150			–	

TOTAL LOAD
PHASE A: – VA
PHASE B: – VA
PHASE C: – VA
TOTAL: – VA

SCHEDULE - PANEL '1LS1'

LOCATION: RM. FA140
DRAWING: 77–ES1

TYPE: SURFACE MTD.
TRANSFORMER:

SYSTEM: 208/120V, 3ø, 4W
SOURCE:

DESCRIPTION	LOAD VA			LOAD VA	DESCRIPTION
COLD ROOM COMRESSOR	900	1	2	1100	WALK–IN DR. HTR. & LTS.
	900	3	4	1100	WALK–IN DR. HTR. & LTS.
	900	5	6	700	WALK–IN FAN COIL UNIT
WALK–IN INCUBATOR	1200	7	8	360	2 DUPLEX RECEPTS.
	1200	9	10	500	LIGHTING
	1200	11	12	540	3 DUPLEX RECEPTS.
MECH. ROOM LIGHTING	800	13	14	200	COLD ROOM BUILT IN RECEPT.
AC–6 LIGHTS & CONTROLS (RECEPTS)	272	15	16	1500	COLD ROOM
CONTROL PANEL DDCP2 – AHU	50	17	18	1500	
CONTROL PANEL DDCP2 – TERMINAL UNITS	2025	19	20	200	INCUBATOR BUILT IN RECEPT.
SPARE	–	21	22	1500	INCUBATOR
SPARE	–	23	24	1500	
SPACE	–	25	26	–	SPACE
SPACE	–	27	28	–	SPACE
SPACE	–	29	30	–	SPACE

TOTAL LOAD
PHASE A: – VA
PHASE B: – VA
PHASE C: – VA
TOTAL: – VA

SCHEDULE - PANEL '2EDP'

LOCATION:
DRAWING:

TYPE:
TRANSFORMER:

SYSTEM: 208/120V, 3ø, 4W
SOURCE:

DESCRIPTION	LOAD VA			LOAD VA	DESCRIPTION
JOHNSON CONTROLS	–	1	2	–	SPARE
3A–109 LIGHTS	–	3	4	–	SPARE
3A–109 LIGHTS	–	5	6	–	SPARE
SPARE	–	7	8	–	SPARE
SPARE	–	9	10	–	SPARE
SPARE	–	11	12	–	SPARE
SPARE	–	13	14	–	3A–121A
SPARE	–	15	16	–	3A–103
SPARE	–	17	18	–	3A–117 BATTERY CHARGER
HWP–8	696	19	20	–	3C–100, 3A–117, 3A–105
HWP–10	696	21	22	–	3A–105, 3A–103
AC–8 LIGHTS & CONTROLS (RECEPTACLES)	1272	23	24	–	3A–101, 3A–104
AC–10 LIGHTS & CONTROLS (RECEPTACLES)	1272	25	26	–	3A–147, 3A–109
CONTROL PANEL DDCP1–AHU	50	27	28	–	3A–107, 3A–106
CONTROL PANEL DDCP1–TERMINAL UNITS	2025	29	30	–	3A–108, 3A–107
SPACE	–	31	32	–	SPACE
SPACE	–	33	34	–	SPACE
SPACE	–	35	36	–	SPACE
SPACE	–	37	38	–	SPACE
SPACE	–	39	40	–	SPACE
SPACE	–	41	42	–	SPACE

TOTAL LOAD
PHASE A: – VA
PHASE B: – VA
PHASE C: – VA
TOTAL: – VA

NUMBERED NOTES (X)

1. ----

SCALE: 3/4"=1'–0"
SCALE: 1/2"=1'–0"
SCALE: 1/4"=1'–0"
SCALE: 1/8"=1'–0"

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER — ELI YADGAR — No. E 12911 — ELECTRICAL — STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

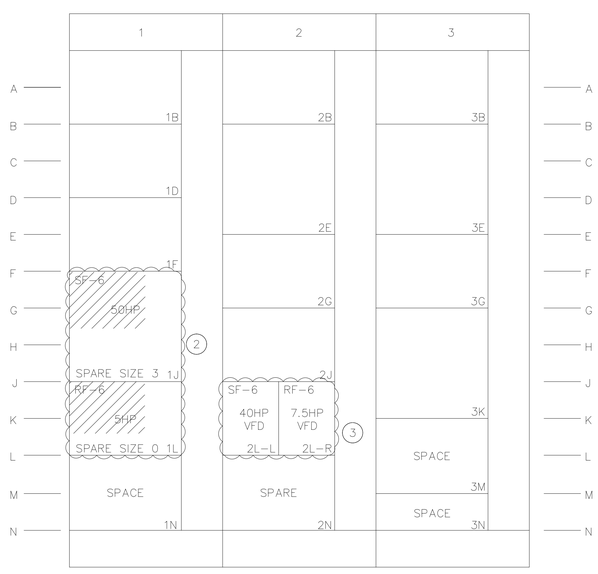
Drawing Title: PANEL SCHEDULES

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12
Project No.: 621–11–127
Drawing No. 77-ES3
Dwg 17 of 20
Drawn: KEM
Building Number: 77
Checked: EY
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

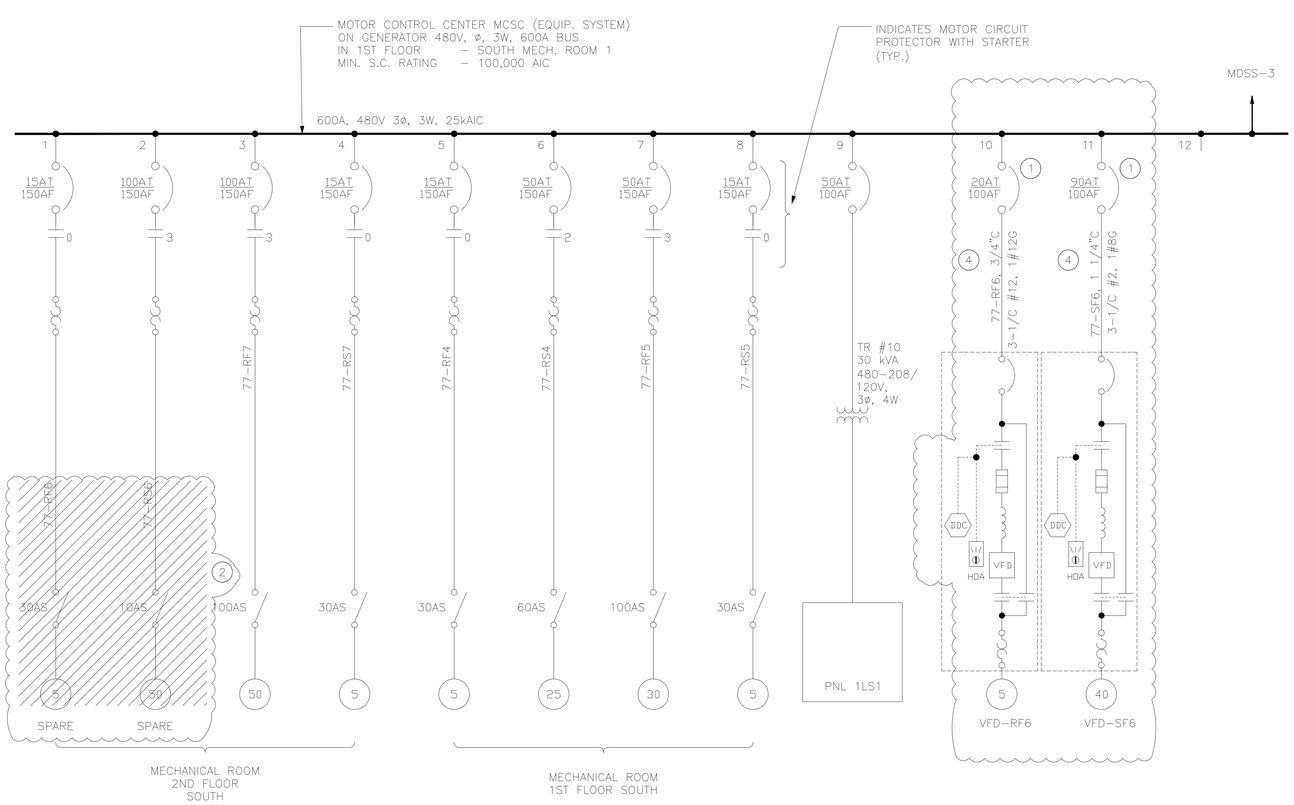
Department of Veterans Affairs



"MCC -MCSC"

NUMBERED NOTES (X)

1. FURNISH & INSTALL THERMAL MAGNETIC BREAKERS, 480V, 3ø, 25kAIC, RATINGS AS SHOWN. SQUARE D, NO SUBSTITUTES, FOR MODEL 4 MCC.
2. DISCONNECT (E) FEEDERS FROM (E) COMBINATION STARTERS & PULL TO SECTION 2, UNITS 2L-L & 2L-R.
3. FURNISH & INSTALL (N) 12" BUCKET W/2 THERMAL MAGNETIC BREAKERS, PER NOTE 1, AND ONE 12" BLANK DOOR, PER MCC-MCSC ELEVATION, THIS DWG.
4. REUSE (E) CONDUITS & WIRES



SCALE: 3/4"=1'-0" / 1/2"=1'-0" / 1/4"=1'-0" / 1/8"=1'-0"

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER — ELI YAGER — No. E 012911 — ELECTRICAL — STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: SINGLE LINE DIAGRAM & MCC ELECTRICAL

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Project Title: REPLACE AIR HANDLER UNITS BUILDING 77	Date: 4/24/12
	Project No.: 621-11-127
Drawn: SZ	Building Number: 77
Checked: EY	Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN
	Drawing No. 77-ES4
	Dwg 18 of 20

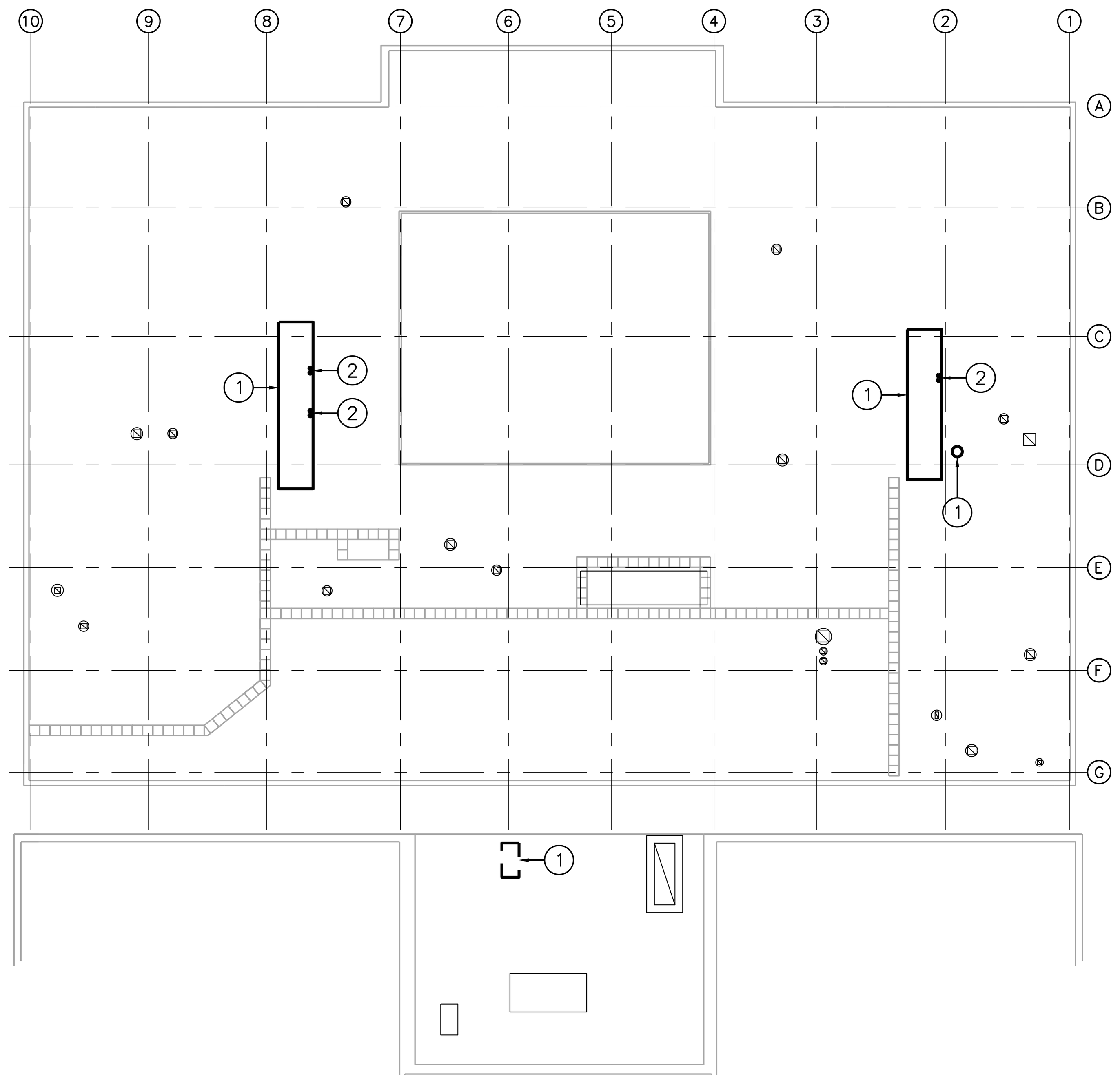
Department of Veterans Affairs

SCALE: 3/4"=1'-0"

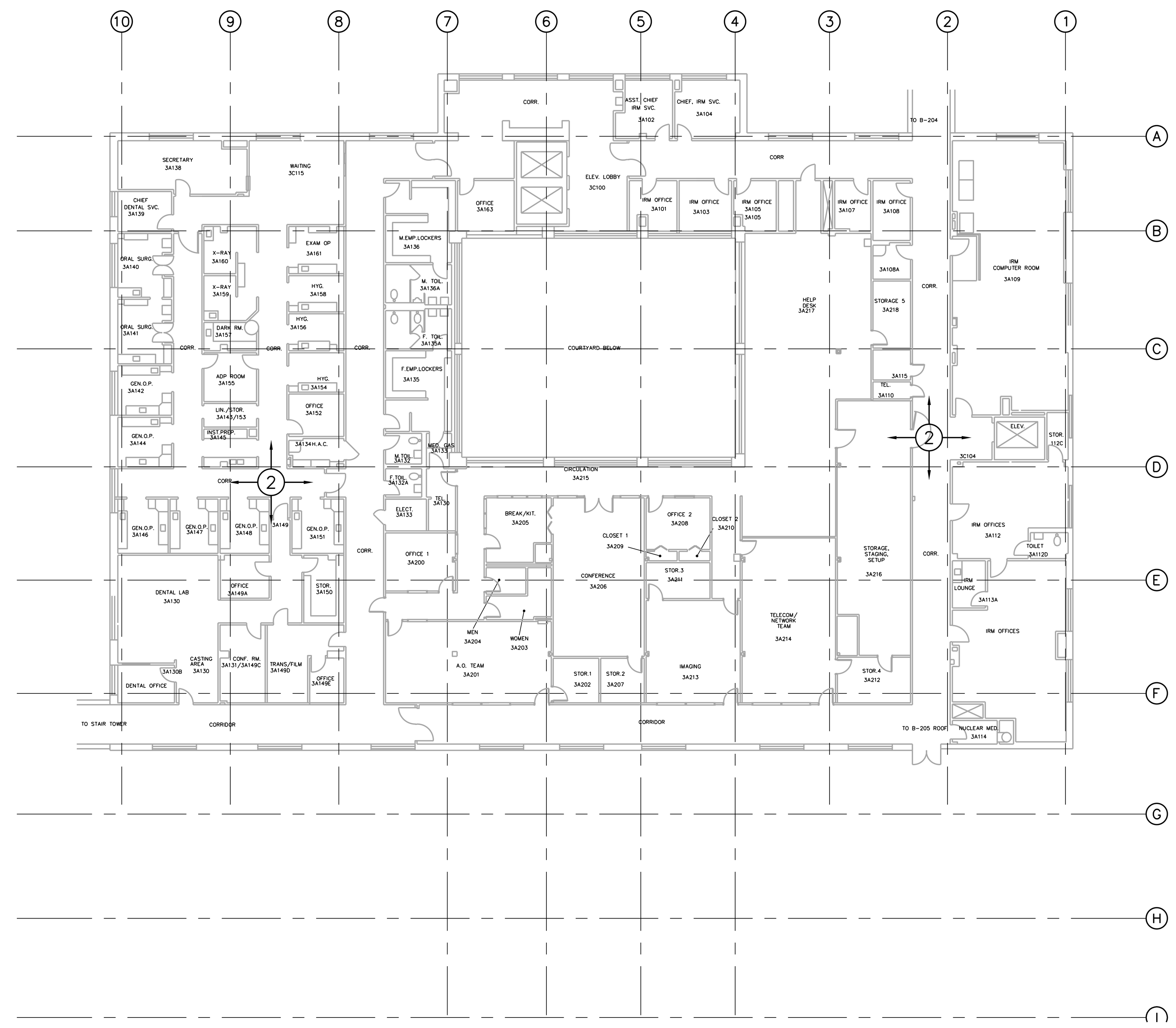
SCALE: 1/2"=1'-0"

SCALE: 1/4"=1'-0"

SCALE: 1/8"=1'-0"



ROOF PLAN
1"=20'-0"



3RD FLOOR PLAN
1"=20'-0"

NUMBERED NOTES ⓧ

1. ROOFING MATERIALS ARE ASSUMED ACM. ABATE ALL AREAS IN ACCORDANCE WITH SPECIFICATIONS PRIOR TO REMOVAL OR DISTURBANCE OF ROOF.

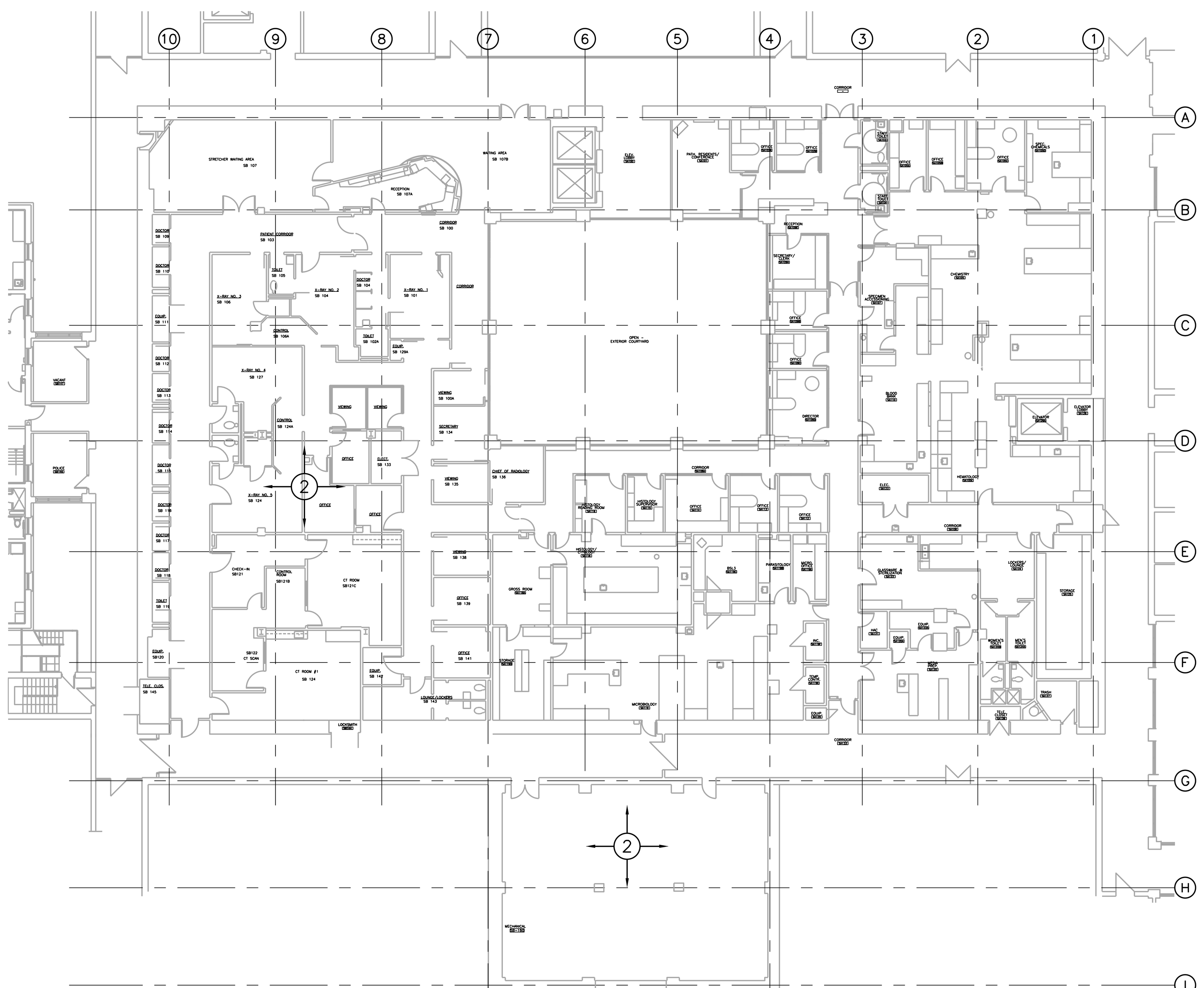
2. PIPING GASKETS ARE ASSUMED ACM. DISPOSE OF GASKETS IN ACCORDANCE WITH SPECIFICATIONS. THIS NOTE APPLIES TO ALL PIPING DEMOLITION ON THE ROOF, 3RD FLOOR, AND 2ND FLOOR.

GENERAL NOTES

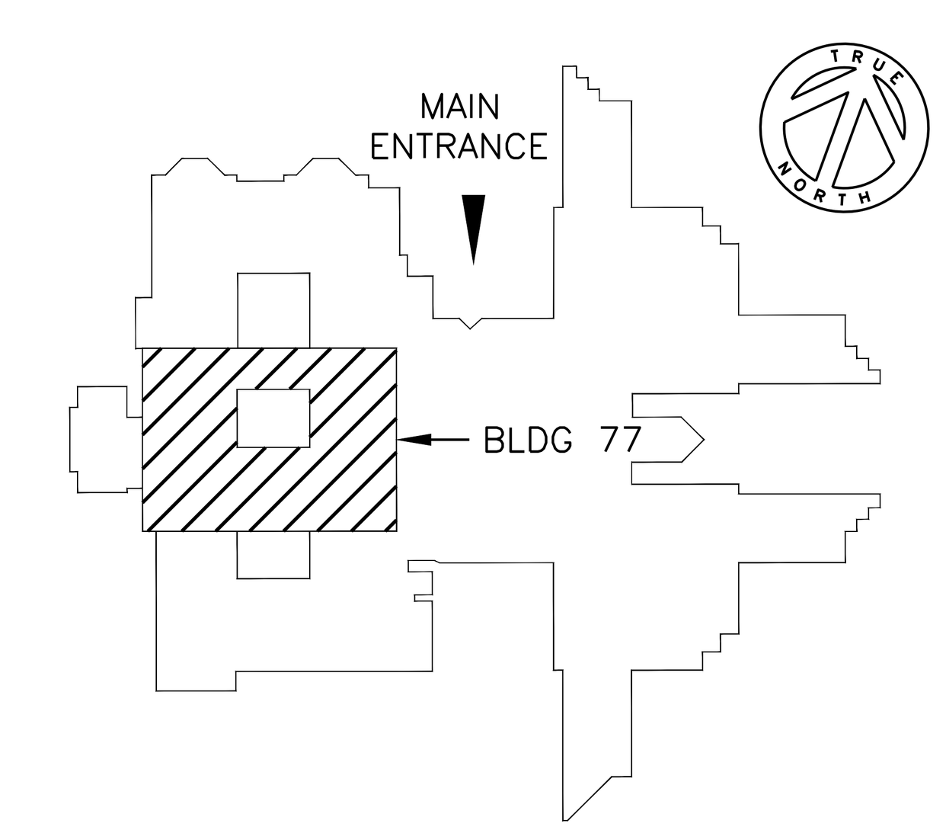
1. SEE MECHANICAL SHEETS FOR EXTENTS OF DEMOLITION WORK.

PHASING

1. WORK FOR 77-AC6 IS PHASE 1, WORK FOR 77-AC8 IS PHASE 2, WORK FOR 77-AC10 IS PHASE 3, WORK FOR 3RD FLOOR TERMINAL UNITS IS PHASE 4, WORK FOR 77-AC8 TERMINAL UNITS IS PHASE 5, WORK FOR 77-AC10 TERMINAL UNITS IS PHASE 6.



2ND FLOOR PLAN
1"=20'-0"



KEY PLAN
NOT TO SCALE

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

DATE	REVISIONS

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REGISTERED PROFESSIONAL ENGINEER PAUL MCDONALD No. 15099 MECHANICAL STATE OF CALIFORNIA

Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: HAZARDOUS MATERIALS

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77

Date: 4/24/12

Project No.: 621-11-127

Drawn: BMA

Checked: PM

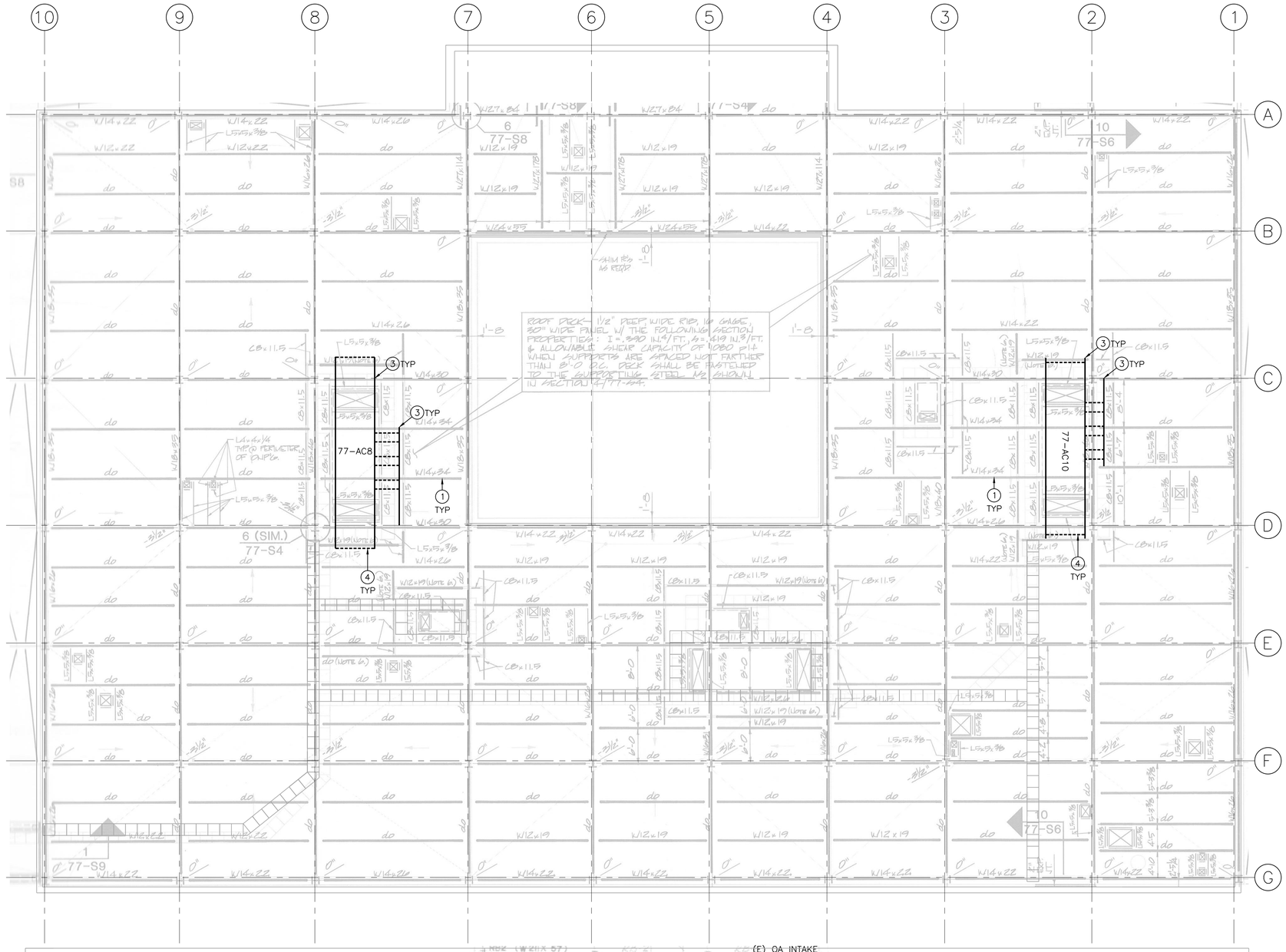
Building Number: 77

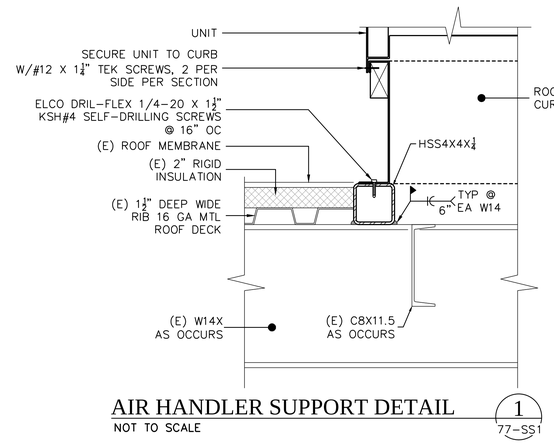
Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN

Drawing No. 77-HA1

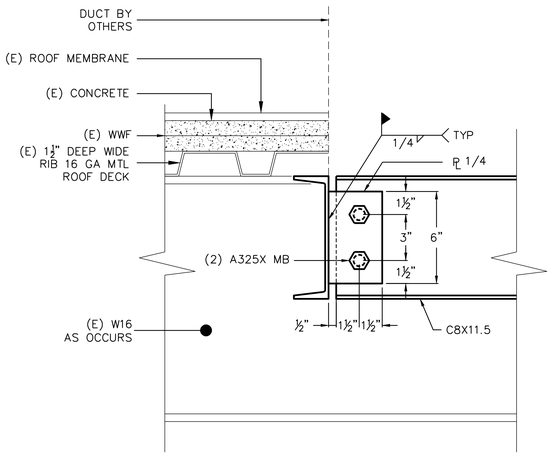
Dwg 19 of 20

Department of Veterans Affairs

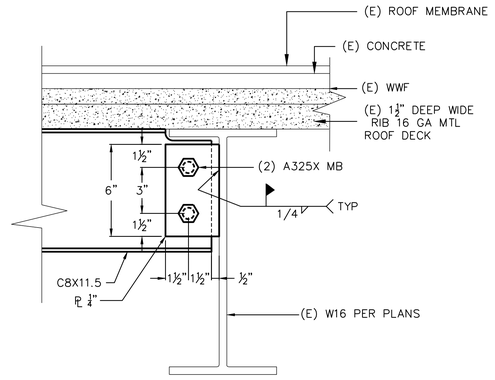




AIR HANDLER SUPPORT DETAIL 1
NOT TO SCALE — 77-SS1



DUCT OPENING 2
NOT TO SCALE — 77-SS1



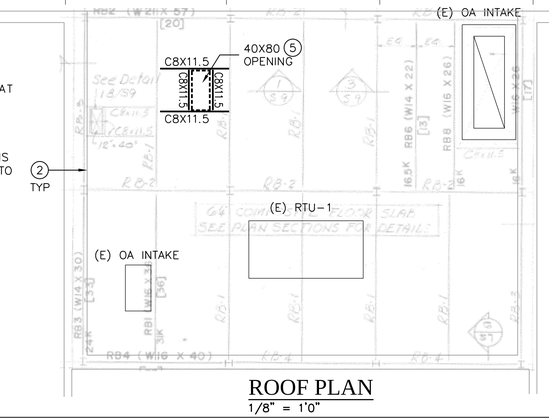
DUCT OPENING 3
NOT TO SCALE — 77-SS1

NUMBERED NOTES (X)

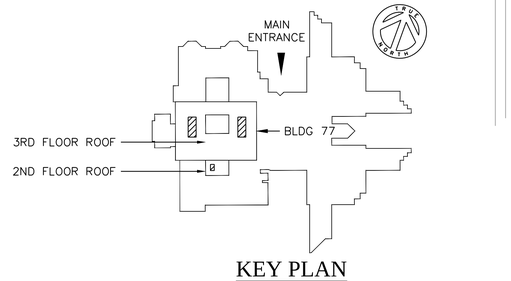
1. BACKGROUND AND EXISTING STRUCTURAL STEEL FRAMING IS TAKEN FROM PROJECT "BED TOWERS RENOVATION PHASE 1", 1984. CONTRACTOR SHALL VERIFY IN FIELD THAT (E) CONDITIONS AND DIMENSIONS ARE AS SHOWN. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO CONTRACTING OFFICER'S REPRESENTATIVE.
2. BACKGROUND AND EXISTING STRUCTURAL STEEL FRAMING IS TAKEN FROM PROJECT "CLINICAL ADDITION", 1980. CONTRACTOR SHALL VERIFY IN FIELD THAT (E) CONDITIONS AND DIMENSIONS ARE AS SHOWN. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO CONTRACTING OFFICER'S REPRESENTATIVE.
3. HSS 4X4X¼ UNDERNEATH ROOF CURB. SEE DETAIL 1 ON THIS SHEET.
4. ROOF CURB OUTLINE. SEE MECHANICAL SHEETS FOR CURB REQUIREMENTS AND ROOF FLASHING.
5. SEE DETAILS 2 AND 3 THIS SHEET.

PHASING

1. ALL WORK FOR UNIT 77-AC8 IS PHASE 3. ALL WORK FOR UNIT 77-AC10 IS PHASE 4.



ROOF PLAN
1/8" = 1'0"



KEY PLAN
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Approved : Project Engineer	Approved : Associate Director
Approved : Supervisory Engineer	Approved : Director
Approved : VP FMS	Approved :

Drawing Title: ROOF PLAN AND DETAILS

IF THIS SHEET DOES NOT MEASURE 42" X 30" IT IS A REDUCED PRINT. SCALE ACCORDINGLY.

Project Title: REPLACE AIR HANDLER UNITS BUILDING 77		Date:	4/24/12
		Project No.:	621-11-127
Drawn: BMA	Building Number: 77	Drawing No.	77-SS1
Checked: PM	Location: JAMES H. QUILLEN VA MEDICAL CENTER MOUNTAIN HOME, TN	Dwg 20of 20	

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